March 2001
Volume 69 No 3

Amateur Radio

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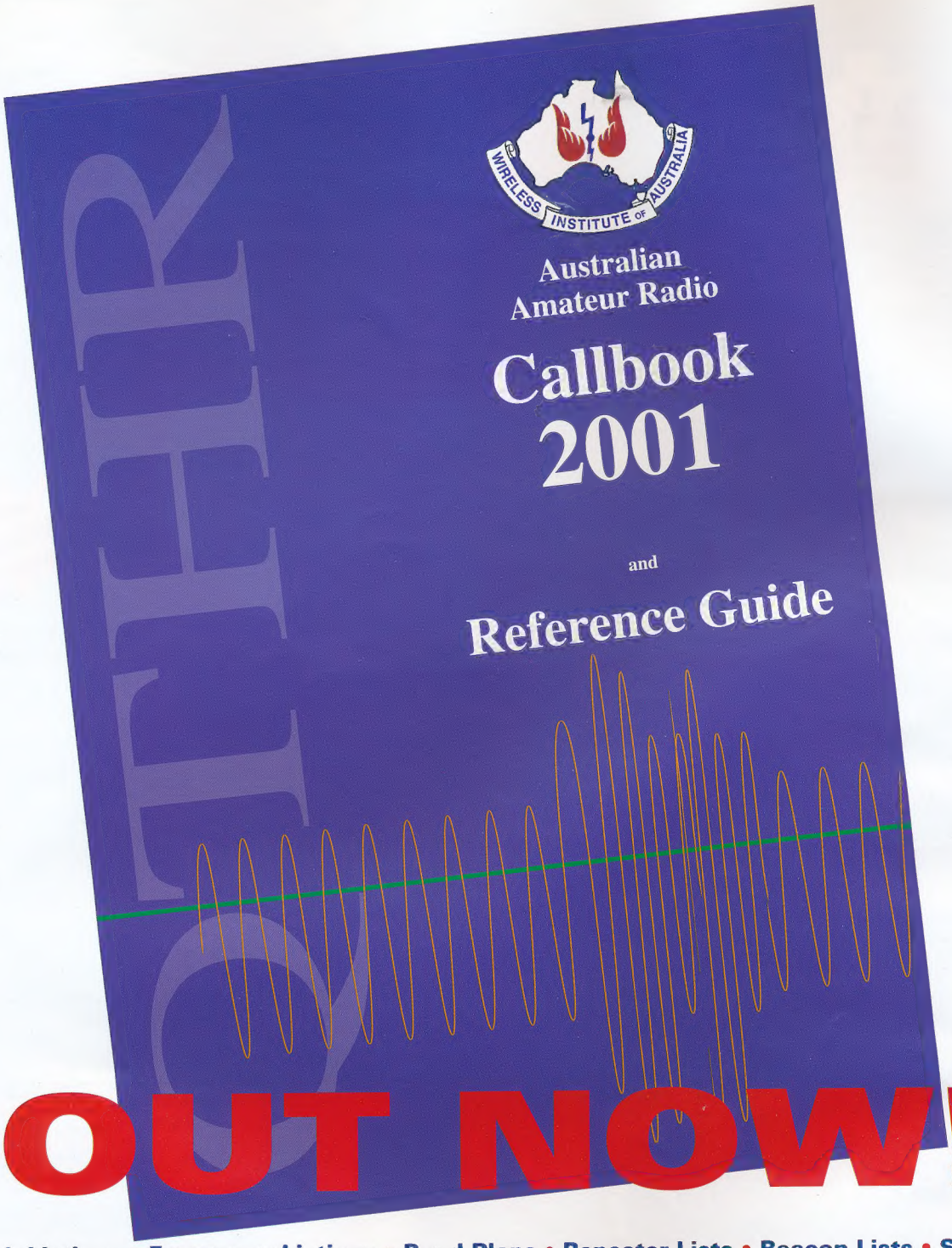

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Our cover this month

Luigi Iemi VK6YEH of WA VHF Group Inc White radomes over slotted waveguide antennas for 5.7 (on left) and 10 GHz beacons. Story Page 40

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Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

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Disclaimer

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Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
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Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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Editorial Comment

Colwyn Low VK5UE

I have to start on a positive note...

I have received a number of articles to put at the bottom of my once empty barrel. I am now hoping that there will be a steady stream of new material to share with you. This month we have the second of our new column "Beyond our Shores". I hope you will all appreciate this widening of our horizons. Next month we will add a column on Computers in Amateur Radio. If we could get a regular feature on construction of equipment for 430MHz and above, it would broaden our coverage.

I found the first copy of *RadioMag* in my local newsagent on 2nd March close to the new *Radio and Communications*. I noted that the full text of Martin Luther's ideas for Amateur Radio in the 21st Century were in *Radio and Communications* March 2001. While this will not suit every one, we need to be thinking how we make the WIA work better for all Radio Amateurs with its present structure. It could be we see some modifications which will improve the structure and its effectiveness.

The WIA structure is almost unique, in that we each belong to a Regional Division, which elects Federal Councillors, who then meet infrequently to discuss problems and hopefully find answers. The Federal Convention appoints four Directors whose job is to run the WIA. The Federal WIA. The Convention makes the policy. The Directors see it is carried out. I think the ordinary member has trouble realising that the Directors are three levels or steps away from them. They have trouble with the path through local Division to Federal Convention to Directors of the WIA. In all other National organisations I am aware of, the membership is part of the national body and elects its office bearers at an Annual General meeting or by a nation wide postal ballot. The Local Branches are funded from the central purse and run local programs for the benefit of members. It's all food for thought, I'm backing discussion at present not a particular path.

I get occasional feed back on the current form of the magazine some good, some critical. Criticism is necessary to keep us on our toes. We do have problems with photographs and PC board patterns. Most of this comes from the fact we use a newspaper press for printing the body of the magazine and it has limited capability to deal with high resolution and soft tones. To put cost in relative perspective. We now produce the magazine for the cost of the print run only on the next rung up the quality ladder. Until the membership increases none of us can afford to pay more for a higher quality of presentation. We get AR to you for about $30 a year or $2.50 an issue.

As I work on this I am sorting out what I can do in the John Moyle Field Day as another commitment is going to take out Saturday evening. So I have to optimise travel and operating time and whether I work all bands or just HF or VHF. The results of last year's Field Day are still being collated. I had hoped to publish them in March but I hope we can do it in April. I think we should try and get results from all contests published within three months of the event. Never having had to run a contest I am not sure how the entries are checked, but if checking every log in detail is what has to be done maybe we should just check a percentage of the entries in each log at random.

Well that is enough for one issue keep operating, keep building, keep experimenting and enjoy your Amateur Radio.

73 Colwyn VK5UE

The views expressed in the Editorial are solely those of the editor and are not necessarily those of any WIA body.

New WIA Director

The Directors of WIA Federal have invited Geoff Taylor VK5TY to join them on the Board until the next AGM. Mr. Taylor accepted this offer and after due process with the ASIC I can now confirm that he is a member of the Board.

Regards, Peter Naish.

WIA Comment

Peter Naish
WIA Federal President.

The rapid growth and usage of the Internet has been a phenomenon during recent years. It has achieved a level of popularity and availability throughout the World that has revolutionised the way we communicate and access information. The "chat" lines and similar services provided by the Internet have enabled anybody with the right equipment to talk at virtually no cost to anywhere in the World. Here we have a rival to Amateur Radio for those who are solely interested in communications rather than technology. Maybe this is one of the reasons why young people are not joining the ranks of Amateur Radio? Some may see the Internet as a threat to our hobby but I believe it is an asset which Amateur Radio enthusiasts can use to enhance their activities. A splendid example of this is the recent trend to use the Internet to link together Amateur Radio repeaters and so extend their area of coverage both nationally and overseas. Many of us will have observed and used the VK repeaters which were connected via the Internet to local and overseas repeaters during this year's Australia Day celebrations. Elsewhere in this issue of "Amateur Radio" you find a letter from the ACA which confirms that the Internet may be used for repeater linking and sets out the conditions under which the Internet may be used. This is important progress and it results from requests made by the WIA to clarify the licencing position on Internet linking.

On a new subject, this is the time of the year when most of the WIA Divisions hold their Annual General Meetings. These are important events because they provide an opportunity for WIA members to have their say on how the WIA is performing and to become involved in WIA affairs if they so wish. The Federal Councillors appointed by each Division will be representing you at the WIA Federal Convention to be held at the end of April. At that meeting many items of national policy, both technical and administrative, will be debated and determined. With the continuing threats to our portion of the radio spectrum from commercial interests it is vital that the WIA continues its strong representation of radio amateurs to the ACA and its government masters. So, please support your WIA Division in any way you can to ensure that the Amateur Radio Service continues to be a major part of Australian life.

WIA News

Internet repeater linking permission from ACA

Glenn Dunstan VK1XX, ACA /WIA liason committee, has raised the above with the ACA on behalf of the WIA and all Amateurs. The following letter from the ACA sets out the current position.

File Reference: X 2001/223

Mr Peter Naish, President, Wireless Institute of Australia, PO Box 2175 Caulfield Junction Victoria 3161

Dear Peter,

Linking of Australian and Overseas Amateur Repeater Stations via the Internet.

I refer to Glenn Dunstan's inquiry on behalf of the WIA concerning the linking of Australian Amateur repeater stations to foreign Amateur repeater stations via the 'Internet'. While the specific inquiry was concerned with the linking of voice repeaters the following advice also applies to data repeaters.

The linking of Australian Amateur repeater stations to foreign Amateur repeater stations via the 'Internet' is permitted providing that linking arrangements and the general operation of foreign repeaters in the network comply with the relevant Australian legislation. In particular, this means the conditions contained in the Radiocommunications Licence Conditions (Amateur Licence) Determination No.1 of 1997 and those contained in the Radiocommunications Licence Conditions (Apparatus Licence) Determination No.1 of 1997.

The Australian Communications Authority is aware of several Amateur packet gateway stations that form part of an Amateur network. We understand that this network transports communications between Amateur stations within Australia and amateur stations in other countries. It is further understood that, through the use of software controls, such communications are fully isolated from the general public.

The interlinking of Amateur stations in Australia with other Amateur stations, including Amateur stations overseas, via the 'Internet' is approved on the following basis:

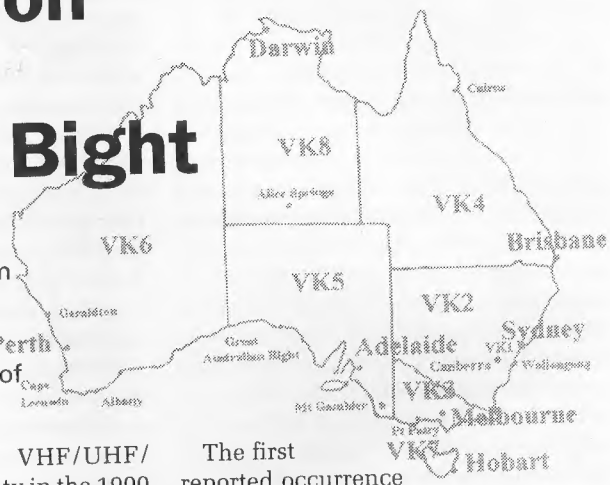
- *Access by non-Amateurs is prohibited*
  The ACA considers that interlinking of Amateur stations via the 'Internet' does not constitute a connection to the PTN, providing that non-Amateurs are technically precluded from gaining access. In these circumstances the 'Internet' connection is analogous to a private line.
- *The interlinking must accord with all applicable licensing conditions. This includes the requirement that the interlinking must not be used to extend, in Australia or overseas, the access privileges of any Amateur. In addition, licensees of Australian Amateur stations linked with other Amateur stations are reminded that they remain fully responsible for all transmissions via their station. It is also particularly important to be aware of 'third party traffic' arrangements when linking with stations in overseas countries.*

If you require any further information, please contact Mr Clive Franklin on (02) 62195239 or by e-mail at clive.franklin@aca.gov.au.

Yours sincerely, Alan Jordan, Manager, Radiocommunications Licensing Policy Team Radiofrequency Planning Group February 2001

VHF, UHF and Microwave Propagation and The Great Australian Bight

by Dr Walter J Howse VK6KZ
4 Renton St, Melville WA 6156
wjhowse@bigpond.com



Dr Walter Howse has studied, and exploited since 1975, the anomalous propagation on the amateur radio frequencies from 144 MHz up to 10 GHz across the Great Australian Bight. This article brings together those studies and experiences for the benefit of other amateur radio operators and poses a number of questions for others to consider.

The location of the Great Australian Bight and some of the key locations can be seen from the map below.

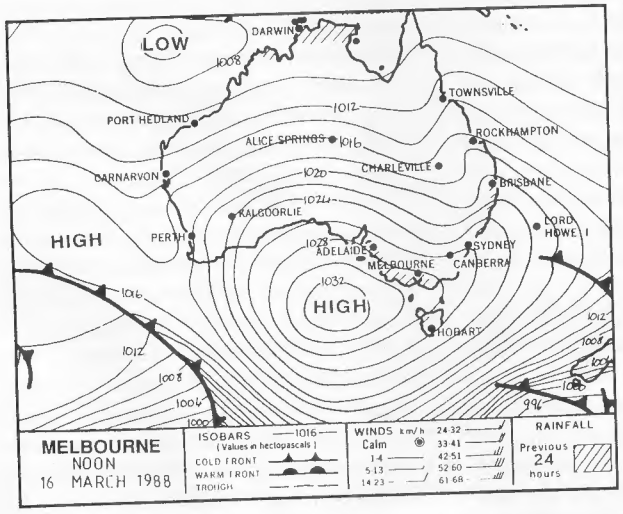
Cape Leeuwin/Augusta (34°S 115°E and population 800) and Albany (35°S 118°E, population 19000) are at the western end of the path but occasionally points as far north as Perth (32°S 116°E, population 1.2 million) can be involved. Commonly Adelaide (35°S 139°E, population 1.1 million) and Melbourne (38°S 145°E, population 3.2 million) are towards the eastern end of the path. The most distant points with contacts on 144 MHz have been South Druin (38°S 146°E) and Perth. There is no permanent amateur radio activity at Cape Leeuwin/Augusta. However the West Australian VHF Group Inc has obtained a licence to place beacons there on 144, 432 and 1296 MHz. The equipment is planned to be installed in late August/early September 2000.

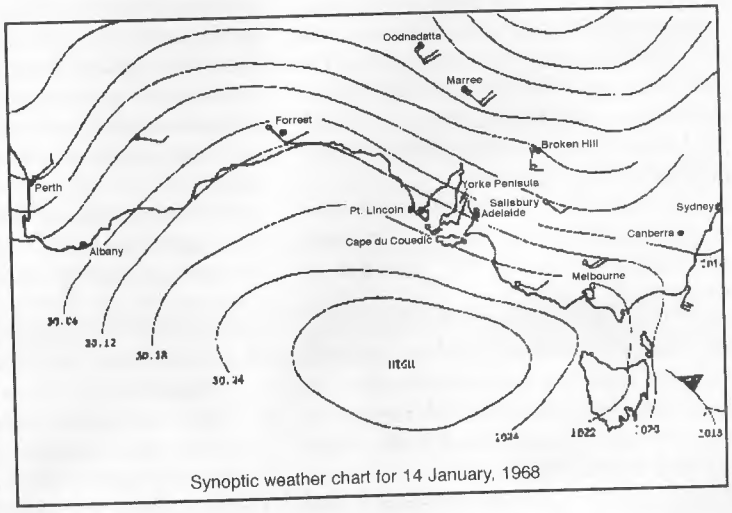
Significantly (and disappointingly) there is virtually no VHF/UHF/microwave amateur activity in the 1900 km between Albany and Adelaide apart from Esperance where there is activity on 144 and 432 MHz.

Had alert Western Australian amateurs read the 1948 report of wartime radar experiences by F J Kerr they would have tumbled to the excellent paths available on the north/south path along the western coast, along the northwestern coast of WA and the east/west one across the Bight. This report was based on observations from 112 Royal Australian Air Force 200 MHz air warning radar stations near the coast of Australia during the period March 1944 to August 1945. The data demonstrated that "super-refraction in summer often extends over a large area of southern Australia" (p444). Interestingly this report was referred to in *Amateur Radio* for May 1950 but its significance appears to have been ignored.

The first reported occurrence of long distance propagation on 144 MHz between Western Australia and South Australia amateurs was a contact between the late Rolo Everingham VK6BO in Perth and Clem Tilbrook VK5GL in Adelaide on 144 MHz on 30 Dec 1951 at 07.12 UTC with AM signal reports given by Rolo of 5/5-8 and received 5/5-6 This contact of 2164 km was just short of the then world distance record of 2253 km.

On 9 February 1952, Rolo again worked VK5GL on 144 MHz at 03.12 UTC. He then worked Reg Galle VK5QR at 03.22 UTC. Reg Galle commented "Clem and I intend watching each time the weather map indicates a possibility - viz cold front from west to east near the coast plus a parallel isobar close to it. Both breakthroughs showed this oddity on weather maps ...we are very keen to test one metre gear"





Synoptic weather chart for 14 January, 1968

The commonly accepted theory had been that these contacts had been achieved by Sporadic E. However observations emerged in the late 1960s which indicated that similar contacts could be possible by tropospheric propagation. (In the 1980s with the additional knowledge, a study by the author of the relevant weather charts suggests that the 1951 contact may well have been by Sporadic E and the second by tropospheric means).

The Weapons Research Establishment of the Australian Defence Scientific Service began propagation tests between Albany and Salisbury 25 km north of Adelaide in South Australia using beacons in Albany on 135.5 MHz (5 kW and 12.2 dB gain yagi) from December 1966 and on 1769 MHz (1 kW and 35.7 dB dish) from October 1967. An early report of that research, McAllister, showed that from October 1967 to April 1968 there were sixty openings of 135 MHz of at least two hours duration, eighteen openings of 24 hours duration and one which lasted for a fortnight in January 1968. The openings on 1769 MHz were not as frequent (twelve occasions only) nor did the signal reach the same high level as at VHF. Further the VHF signal was always present when a UHF signal was received. Illustrating this was a graph showing that in one week in January 1968, the strength of the VHF beacon peaked at 10 dB below free space and that of the UHF beacon at 25 dB.

Spurred on by the success of these tests and urged on by the then President Don Graham VK6HK, the West Australian VHF Group (Inc) installed a 144 MHz beacon in October 1968 at Mt Barker 50 km north of Albany. This led to the first of many contacts on 144 MHz between Albany and Adelaide. This first QSO was between Wally Green VK6WG and Mick McMahon VK5ZDR on 3 January 1969.

Subsequently the Great Australian Bight has been bridged on a number of the other amateur bands with first contacts made on

- 432 MHz on 11 December 1972 between VK6WG and VK5ZDY
- 1296 MHz on 25 January 1977 between VK6WG and VK5QR
- 2304 MHz on 17 February 1978 between VK6WG and VK5QR
- 3456 MHz on 25 January 1986 between VK6WG and VK5QR
- 10368 MHz on 30 December 1994 between VK6KZ/p and VK5NY/p

In addition to the Albany Adelaide path of about 1900 km, contacts have been made over longer distances from points in the south west of WA as far west along the coast as Cape Leeuwin (on 144, 432 and 1296 MHz) by VK6KZ/p and as far north from Perth (on the same bands) to points south and east of Adelaide and into Victoria. These contacts all cross the Bight and the longest distances worked have reached

- 2864 km on 144 MHz VK6KDC Manjimup - VK3DEM Bairnsdale
- 2864 km on 432 MHz VK6KDC Manjimup - VK3DEM Bairnsdale
- 2449 km on 1296 MHz VK6WG Albany - VK3ZBJ Melbourne

These openings appear to be dependent on the presence of a high pressure cell in the Great Australian Bight. For example the following weather map of 16 March 1988 was provided in a paper by Jamieson illustrating the conditions of "a virtually stationary and typical high pressure system which produced outstanding results from Albany to Adelaide and Melbourne over a period of four days on all bands to 3.5 GHz".

The studies reported in 1948 by Kerr and those by the Weapons Research Establishment also make this link between good propagation and the surface pressure distribution. But is there more than a high pressure cell needed?

Russell Lempke VK3ZQB pointed out the significance of the charts of the upper level pressures and the relationship between the peaks in the upper levels and the peaks in the Mean Sea Level (MSL) charts. His paper presented to the Gippsland Technical Conference in 1999 and to be available at the 2000 Conference concluded

I found the upper level map gave clear and reliable indication of a pressure system that was likely to produce propagation, and it also indicated by the size of the upper level cell, the approximate area that could be expected to be in the duct. Analysis revealed that propagation was likely when the cell's 500 Hpa point, had an altitude around 5.9 kilometers, and its position at 500 Hpa, was not too far from the cell centre at ground level. Some displacement always occurs, as the top of the cell will lean toward the landmass where there is a large, warm, dry air mass in the upper atmosphere during summer.

Certainly the author has experienced upper level disturbances, not shown on MSL charts, which have destroyed propagation! The presence of these crossing the Western Australian coast in a south east direction certainly discourages a journey to the south coast even if a strong high pressure cell is shown on the MSL charts in or approaching the Bight!

The author is of the view that in addition to the presence of a favourable high pressure cell there needs to be a further mechanism coupling the signal into and out of the duct. The main duct is presumed to be provided by the subsidence inversion formed when the air descending slowly within the cell becomes progressively heated by compression. Such heated air is also low in moisture due to its high altitude origin.

What does the research relating to the Bight say?

Baker reported observations which showed that it was unlikely that the 135.5 and 1769 MHz signals could have crossed the Bight between Albany and Adelaide by multiple reflections between the sea and an elevated layer. He suggested that the propagation may occur in an elevated duct if a tilted layer is present which slopes upwards near the transmitter in the direction of propagation.

McAllister was confident that both the 135.5 and 1769 MHz signals were propagated by the same basic mode and proposed that the signals were fed into the surface duct at Albany and guided along an elevated duct which gradually rose in height across the Bight to the 1500 m level above Adelaide where they were scattered out again to the receiver.

Isobaric charts provided in these articles indicated that the position of the centre of the high pressure cell was south of the path - a phenomenon which has been confirmed by many observations by the author and many other amateur operators.

Referring again to the wartime research on the 200 MHz radar echoes, Kerr reported that from mass plots of echo occurrence, super-refraction in southern Australia occurs most frequently in the rear halves of the migratory anticyclones. The

characteristic feature of the region in the rear of an anticyclone in southern Australia is an offshore gradient wind, which carries warm, dry continental air across the coastline. Kerr stated that "super-refraction in southern Australia is associated with an offshore gradient wind". Nowadays this is described as an advection inversion.

Kerr suggested that when hot continental air is crossing the coast at a fairly small angle, the cooler air over the sea, assisted by sea breeze processes, forms a frontal discontinuity along or near the coastline, with a wedge of cool maritime air undercutting the continental stream. This he described as a coastal front, sea breeze duct. The surface of the discontinuity approaches ground level 80-160 km inland rising towards the sea with the height at the coastline being commonly 600-1000 metres.

In addition to this, Kerr described an offshore streaming diffusion duct as follows

As warm dry air passes over a slightly cooler sea surface, the lower layers are progressively modified by downward eddy conduction of heat to the cooler sea and upward eddy diffusion of moisture from the sea into the air. Modification of the air in the lowest layers increases the lapse-rate of refractive index, producing a surface duct for some distance out to sea. (p.455).

He also described nocturnally-cooled air carried out to sea which could extend the duration of super-refraction of the offshore streaming type. Kerr proposed that these processes were responsible for three types of diurnal variation namely

Coastal front, sea breeze 1300-1900 hours

Offshore streaming 1700-0100 hours

Advection of nocturnally cooled air 2400-0900 hours

It is a combination of a subsidence inversion and these processes that appear to be needed for the path across the Bight.

This is reinforced by the diurnal variations noted in the path. Baker noted that anomalous propagation at 135.5 MHz was more likely to occur at night and in the morning than in the afternoon. The diurnal variation of the 1769 MHz signal was similar to, but not as marked, as that at VHF.

Is it the lack of such processes in the winter months which inhibit propagation when the intense highs with central pressures exceeding 1030 hectopascals are present in the Bight region?

Using a chart recorder and dedicated receiver, Colin Hurst VK5HI monitored the Albany beacon VK6RTW on 144 MHz over the period October 1979 to March 1980. His unpublished graphs of signal strength and UTC time showed that the beacon was strongest between 0600 UTC and 2300 UTC or 1400 local time to 0700 the next day. Observations by the author and others on a less systematic basis support this view. Hurst also reported that during the six month period of his observations, the signal strength was at 10 dB below free space for 1 hour, at -15 dB for 2.5 hours, -20 dB for 11 hours, -25 dB for 29 hours, -30 dB for 53 hours and above his receiver threshold of -55 dB for 221 hours.

Over a period of time, the world record distances established across the Great Australian Bight on the bands from 432 MHz to 3456 MHz have been exceeded by contacts between Hawaii and California. Apart from being shorter (2000 km versus 4000 km), the Bight path appears distinctly different from the Hawaii/California path since the latter does not skirt initially along a land/sea interface as the signals leave (or arrive at) Hawaii. The Hawaii/California path appears to depend significantly on the height of the operator at the Hawaiian end. The report by Overbeck and reinforced by later reports of contacts over this path, pointed out the importance of being between 1500 and 2600 m above sea level in Hawaii. Contacts from points at lower altitudes are much less frequent. Overbeck suggested that the maximum height of the duct at the California end was about 450 m. Such observations were repeated by Tynan and Pocock.

In the case of the path across the Bight, there are few points above 200 m anywhere at the western end of the circuit. Most of the author's successful operating has been from about this height. He has not found a suitable site close to sea level. Wally Green VK6WG has made his contacts from 144 to 3.5 GHz from less than 100 m above sea level. At the South Australian end, contacts have been made from virtually sea level upwards to at least 700 m.

Do the small land masses of Hawaii mean that the mechanisms for getting into or out of the upper level duct in Australia are not present and that is why altitude appears so important in the Hawaii/California path?

Some further observations about the Bight path.

Firstly the path does not necessarily end at or close to the South Australian coastline. As pointed out earlier contacts have been made from southwestern Australia to Melbourne and beyond. Contacts from Perth to Adelaide and beyond are rare (see Howse) but have occurred notwithstanding the approximate 600 km of land between Perth and the Bight. Such contacts on 144 MHz in early 1996 extended 500 km beyond the South Australian coastline to beyond Melbourne over land (see Jamieson).

Contacts between stations along the south coast of WA and Melbourne and beyond are much more frequent and usually occur as the high pressure cell moves further east in the Bight with sometimes the loss of the Adelaide stations. Since few stations in the northern suburbs of Melbourne have been heard when stations in the southern suburbs are being worked, the author suggests that the roughly east-west valley between the end of the Great Dividing Range and the Otway Ranges may preserve the far end of the duct enough to continue the propagation. Interestingly the only station worked in central Victoria from Perth and Albany has been VK3CY in Wedderburn which is north of this part of the Great Dividing Range.

The frequent contacts made by Darryl Church VK6KDC from Manjimup (250 km south of Perth and 180 km west of Albany) to Adelaide and beyond - especially his contacts to Rob Ashlin VK3DEM in Bairnsdale on both 144 and 432 MHz - indicate that the over water path of the Bight can be extended at each end by at least several hundred kilometres.

The only contact between WA and Tasmania on 144 MHz was from David Lloyd VK6AOM in Esperance to an unknown station in Devonport. The lack of contacts is probably due to the population distribution in Tasmania and the mountainous terrain in the north west of that State. Esperance to Devonport missed most of that terrain.

David also worked into New South Wales in 1986 on 144 MHz and the Great

Circle path would have been across the Bight to Adelaide and then across land to Sydney. On 20 February 2000 Bill Hockley VK6AS worked Rod Collman VK2TWR in Nimmitabel on 144 MHz - a similar path across the Bight and then a roughly equal distance across land. Mechanism?

The track of the high pressure cells is at higher latitudes in summer and the track moves towards the equator in the winter months. Notwithstanding the potentially more favourable location of the high pressure cells across the continent (and much higher central pressures - above 1030 hectopascals), no really long distance contacts (over 1000 km) in the winter months have been made by tropospheric propagation (characterised by length of opening and relatively stable signals in contrast to Sporadic E with short openings and unstable signals) from Perth on any of the VHF/UHF bands. How much is this due to the lack of operators across the central parts of Australia?

Some other observations by the author.

The author lives in Perth and is over 400 km from the south coast. Over a 20 year period he has had to judge when it is worth driving there to exploit the conditions. The author is guided by a number of factors -

- the long wave pattern in the Southern Hemisphere
- the presence of the high pressure cell in, or approaching, the Bight
- the central pressure of the cell - prefer 1026 hectopascals or higher
- the prognosis charts available for the next 2 days and more recently for longer periods
- Perth forecast temperatures - nice when these exceed 36°C
- Presence of a cyclone (hurricane/ typhoon) off the northwest coast of Western Australia
- any reports of reception of the Adelaide beacons on 144, 432, 1296, 2400 or 10 GHz or of reception in Adelaide of the Albany beacon on 144 MHz

On arrival down south, the author is encouraged by low cloud usually carried in a northerly direction across the coast and by fog/mist in the mornings, by reception of any of the beacons from Adelaide or Mt Gambier - and most of all by contacts with the enthusiastic amateurs on the other side of the Bight. They are not only enthusiastic but are prepared to stay awake all night testing the "MUF". Sleep can come in the middle of the day when propagation appears least favourable!!

A word of warning is needed with respect to heavy dependence on isobaric charts. Meteorologists are forced to make judgements when placing the isobars on the map. These placements arise from consideration of the Australian computer model of the atmosphere (and compared with other models from overseas), satellite imagery and the relatively few surface observations (especially from the Bight itself) fed into the system. The isobars may differ from reality. If these charts are then translated by others for the purpose of weather reports on television then distortion is easy to emerge.

The charts available to the author come from the Australian National Meteorological Centre based in Melbourne through the Internet and include manual as well as computer model generated charts. Manual charts include a 24 hour prognosis and the computer 48 and 72 hour prognoses. However the long wave pattern information provides some reassurance of the position and likely persistence and movement of the high.

Favourable conditions in the Bight (and the Hawaii/California path) may be affected by the El Nino Effect. In El Nino years, the track of the highs is even further south and as a result the cold fronts which disturb the propagation are pushed further polewards away from the Bight. A preliminary examination suggests that good conditions have occurred across the Bight in El Nino years.

Finally, do we on the west coast of Australia have another path - one to eclipse the Hawaiian/California one? As far back as 1968, Brian Tideman VK5TN suggested that tropospheric propagation between Carnarvon (600 km north of Perth) and the Malagasy Republic might be good for contacts on 144 MHz and occasionally for contacts between Perth and South Africa. (This is the same path referred to by Pocock in his 1996 article on transoceanic ducting at VHF.) The Kerr article also reported on long range echoes from stations along the northwest coast of Western Australia and of the detection of an IFF (Identification of Friend or Foe) transponder signal from a Ceylon bound aircraft by a radar station at Carnarvon (800 km north of Perth) at a distance of 1600 km.

In March 1996, the West Australian VHF Group Inc installed a directional (towards southern Africa) beacon near Bunbury (180 km south of Perth) on 144 MHz (VK6RBU) and reports of reception of it came by 14 MHz from Reunion Island (6000 km). As a consequence of this, telephone, fax and Internet address information were exchanged with the Reunion operators FR5DN and FR1GZ - particularly by Don Graham VK6HK who constructed the beacon transmitter and the author. In the four years since then, a healthy scepticism continues about those reports and interest seems to have waned on Reunion Island. The operators there did not obtain the necessary beacon licence from France and so the chances of a contact remain very very low.

In summary, the Great Australian Bight is one of the two most exploited paths in the world for long distance propagation of VHF/UHF and microwaves. It has been bridged on all bands between 144 MHz and 10 GHz (except for 5.7 GHz). The main challenges now lie in testing the 10 GHz path beyond the 1912 km mark and testing the upper frequency limit. Maybe water content will deny long paths on 24 GHz but who knows? Anyway there is still 47 GHz and up - one can dream as others did 40 years ago for 144 MHz and the higher frequency bands!

Acknowledgments

Thanks to Eric Jamieson VK5LP who, between 1969 and 2000, wrote the column "VHF/UHF An Expanding World" in Amateur Radio — Journal of the Wireless Institute of Australia and created an ongoing record of significant contacts and happenings on those bands — an indispensable source for all researchers. Appreciation is expressed to all those involved in establishing and maintaining beacons and especially to David Minchin VK5KK and crew for the Adelaide installation on so many frequencies and to the Mt Gambier group. Finally thanks go to Don Graham VK6HK, Eric Jamieson VK5LP and David J Low of the Australian Defence Force Academy for their review of the original draft of this article and the many helpful comments provided by them.

continued on page 21

CTCSS Encoder Board

by Eric van de Weyer VK2KUR

Add tone squelch to the local repeaters (147.025 and 438.575) to combat interference from various sources.

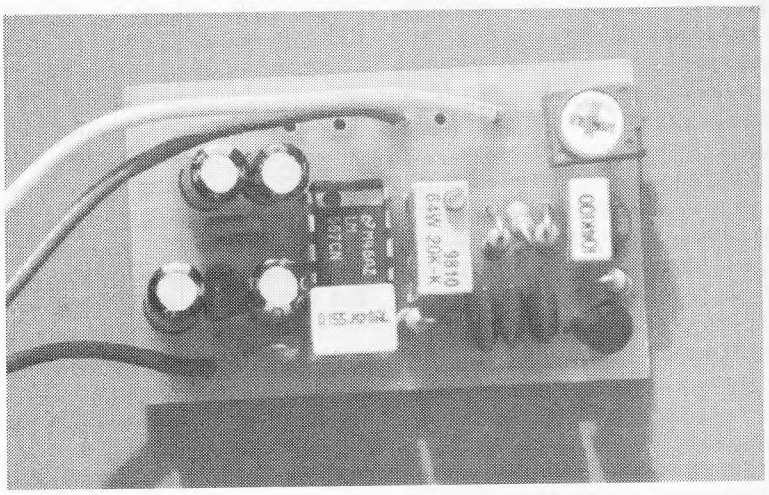


Figure 1

Many of the members of our local club use older, often ex-commercial, equipment on the local 2m and 70cm repeaters, both of which suffer varying degrees of interference due primarily to their proximity to the Sydney CBD. Many of these radios do not have CTCSS (Continuous Tone Coded Squelch System) tones available in them so it was decided to come up with our own encoder board, if possible, at a lower cost than importing ready made ones from overseas. Fig 1 & 3 show pictures of the completed board.

The local repeater initially used 141.3Hz for its tone squelch, however, after some research and looking at was being used around the country it was decided to change to the more common

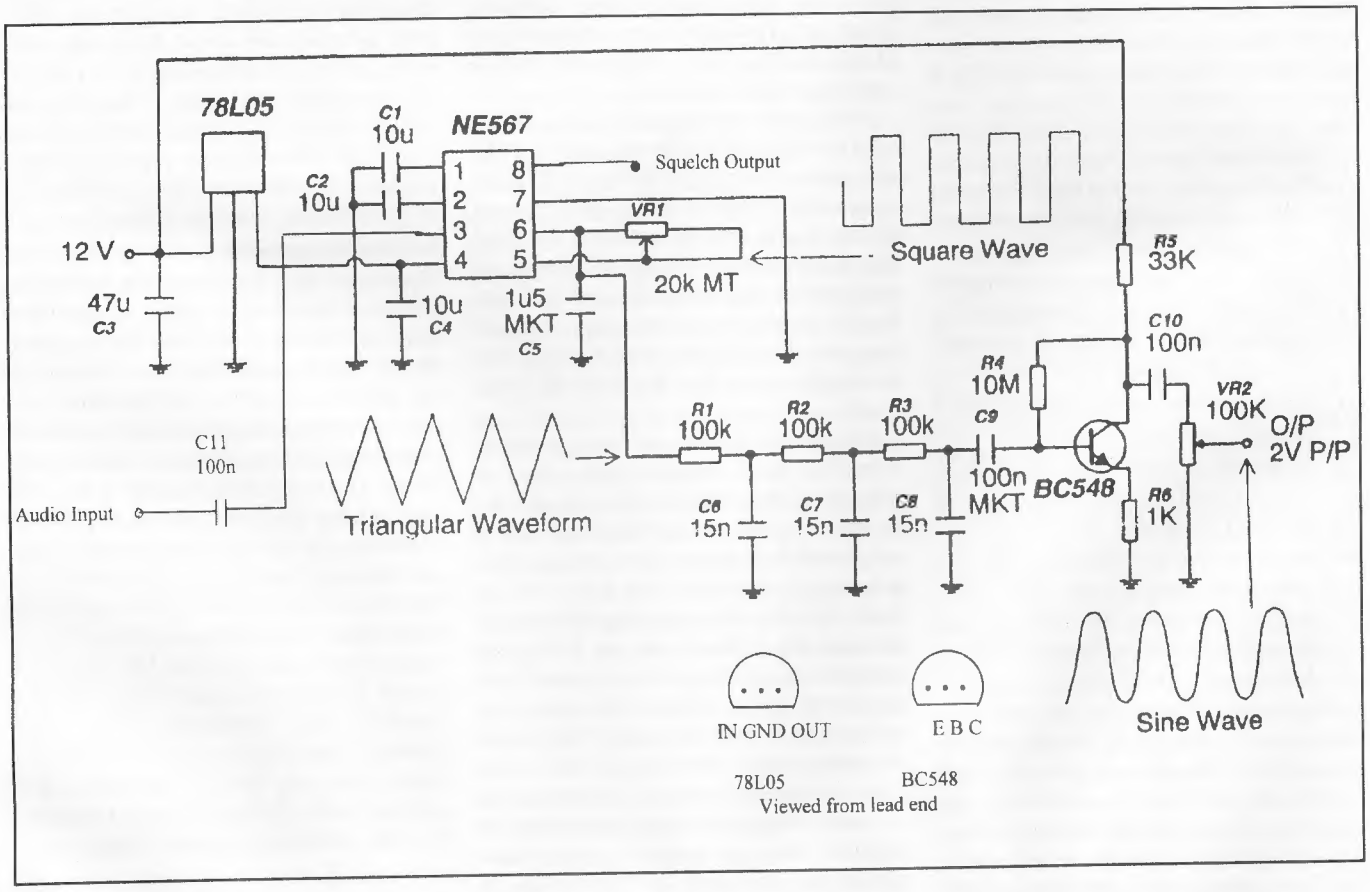


Figure 2

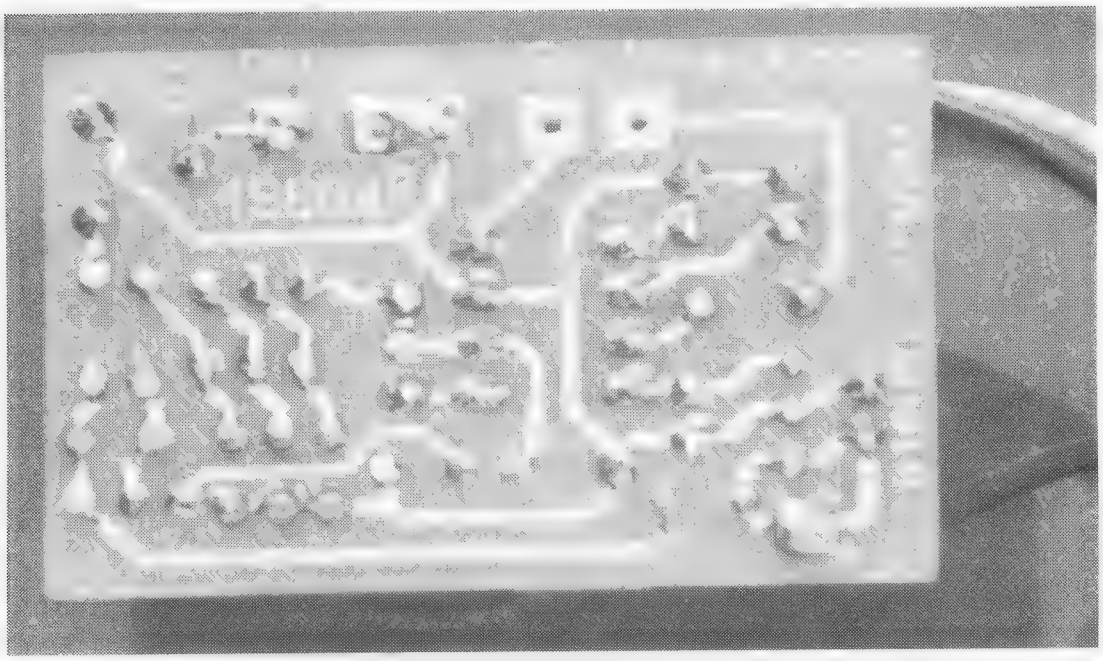


Figure 3

123Hz which is where we are today. In fact, the latest (2001) WIA Callbook notes that 123Hz is recommended for use where CTCSS is being used to overcome interference problems whereas 141.3Hz is suggested for repeater linking purposes.

A simple CTCSS encoder (Fig 2) was described by Will McGhie's Repeater Link column in July 1996 AR (page 46) and this article should be referred to for a full description of the encoder operation. It is based on a NE567 tone decoder IC which has either a square wave or triangle wave output from its oscillator. The triangle output is used and passed through a three stage RC filter which gives a near sine wave output. This is then buffered and fed to the output.

One of the more important features of the encoder is its stability, which is due to the components used most importantly being the 1µ5 MKT capacitor on pin 5 of the IC.

The encoder has two controls. One is a multiturn pot, which is used to set the frequency of the oscillator. It has a frequency range of about 70Hz to about 250Hz . The other pot is used to vary the output level so that the correct modulation level may be set. Depending on the frequency setting they can get up well over 1.5V RMS and usually sit at about .5V RMS at the 123Hz mark. Generally, on FM transmitters, a deviation of between 300Hz and 600Hz is all that is needed to give reliable operation of the tone squelch at the receive end. This is a fairly low level compared to the normal voice deviation of somewhere around 3.5kHz.

The encoder will work on any input from about 8V up as it includes a 5V regulator on board.

I have also added an extra capacitor to the input of the NE567 (pin 3) and bought it to an input pin and also bought out the Squelch output from pin 8 of the IC. This was to make it easier for future experimentation with decoding received tones to enable the radio to be tone squelched as well, although, as yet, I haven't had time to do so.

I set about to design a PCB (Fig 4) for the project resulting in a fairly compact yet easy to assemble board measuring 45mm x 28mm with a component height of 12mm (see attached pictures of the board). This was then manufactured by a local manufacturer and made up into kits for sale to members.

We have now fitted these encoders to several radios with excellent results. The transceivers to which I have fitted them so far include Philips FM900 and FM828, AWA RT80 and RT85, Yaesu FT290 and FT790. I believe that some others have fitted them to other radios as well. Many transceivers include a tone input to feed in such a tone and on those that don't, it is usually a fairly simple matter to find an appropriate place into which to feed it. It is preferable to feed the tone in at a point close to the actual modulator so that it does not go through any pre-emphasis network which may be in the radio.

I have included, on most of the radios I have converted, a switch to turn the encoder on or off so that the tone does not have to be transmitted on all channels although that is usually not a major problem.

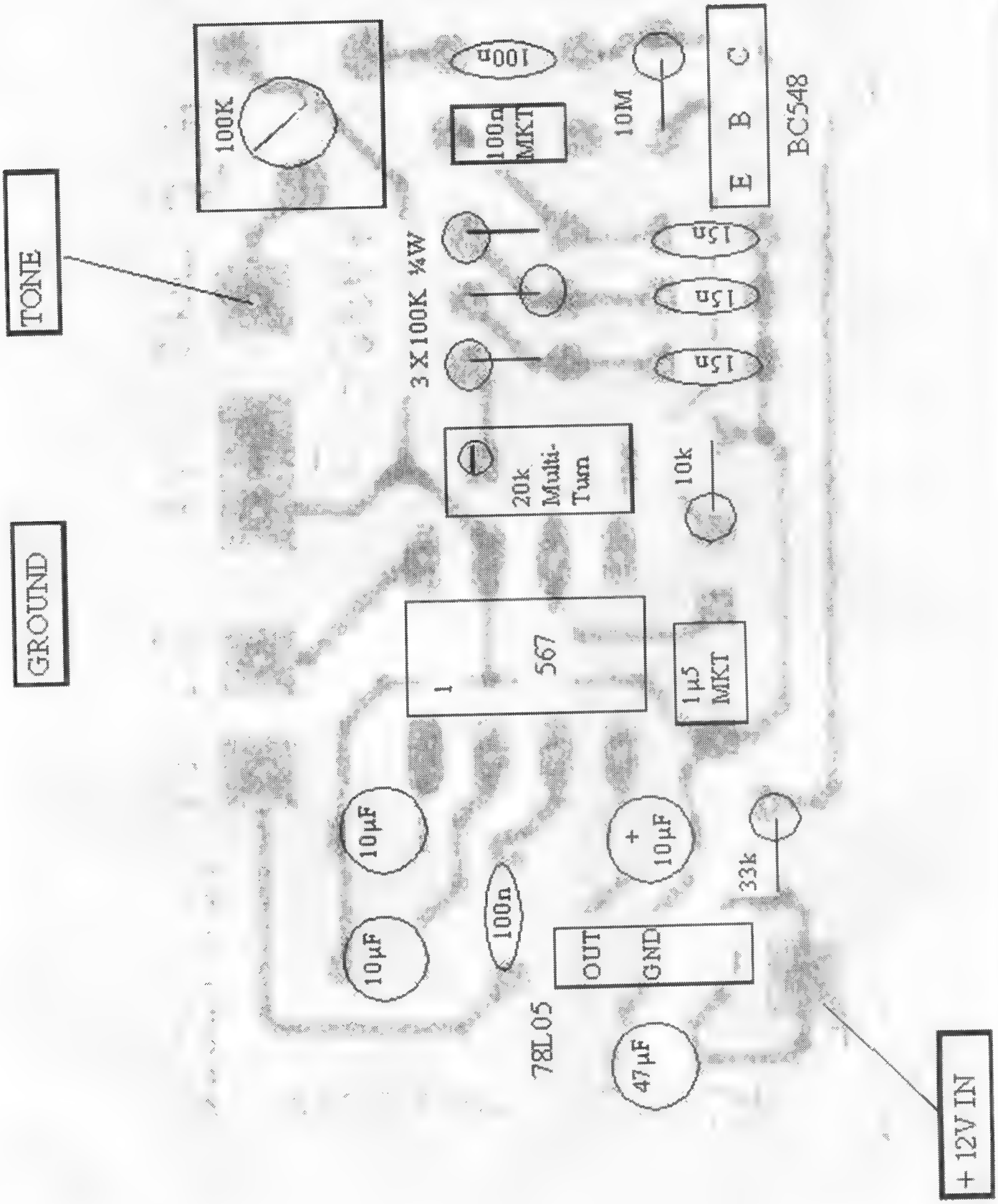
As far as setting up goes, I test each unit as it is made and then tune it to the desired frequency using a frequency counter, before installing it. If you don't have a counter, however, you can tune it once it is in the radio by starting off transmitting on the repeater input and gradually tuning the multiturn pot until the repeater starts transmitting and then keeping going until it drops out. Then wind it back to the midpoint between the two positions. It may be necessary to employ a friend to listen to the repeater for you and tell you when the repeater opens and closes either on another band or over the phone.

Following are brief instructions to install in several radios:

Philips FM900:

On the Synthesizer/Control board:

1. Check that R357 (470k) is installed. It is located between the Deviation and Modulation Balance trimmers. If not, install a 470k 1/4W resistor.


TONE
GROUND
100K
100n
100n MKT
10M
E B C
BC548
3 X 100K ¼W
15n
15n
15n
20k Multi-Turn
10k
567
1
1µ5 MKT
10µF
10µF
100n
+ 10µF
33k
OUT
GND
78L05
47µF
+ 12V IN

2. Locate the option connector U405 (one of 3 rows of holes on the board) and connect the encoder as follows:

Pin 18 - +10V
Pin 21 - Ground
Pin 23 - Tone out

AWA RT80 Receive board

1. Locate S201 the Tone Squelch connector .
2. Connect the encoder as follows:

Pin 3 - Ground
Pin 6 - +9V
Pin 7 - Tone output.

AWA RT85 Receive board

1. Locate J358 the Tone Squelch connector .
2. Connect the encoder as follows:

Pin 1 - Ground
Pin 8 - +8V
Pin 6 - Tone output

Yaesu FT290/690/790

On the these radios there is a tone board connector in the area next to the battery compartment with the following connections:

Black – Ground
Red - +9V
Green - Tone out.

These radios also have a tone On/Off switch on the small board also adjacent to the battery compartment.

The foregoing should give many people a quick start to installing the CTCSS board whilst others will need to look into their radios to determine where to connect it. It seems that many radios both commercial and Amateur already have a means of connecting a CTCSS encoder or encoder/decoder in them so it is just a matter of identifying it.

LPDs UHF Radio Amateur Problems in the Netherlands

In the Monthly magazine "CQ-PA"' (one of the Dutch equivalents of AR, there are two national Radio Clubs in PA land') of March 2000 there appeared an article by J. W. A. M. te Broekhorst PA3AYW drawing attention to a ruling by a Judge in the City of Utrecht where a radio amateur (V) was sued for damages by a supplier (F) of Low Power Devices (LPD) transceivers. The ruling was that the radio amateur could not be blamed for any wrongdoing.

I was involved right from the start as V's legal adviser, and as such I feel competent to give the proper perspective of the proceedings. The background of the problems is well known (in the Netherlands) - it involves the restaurants of a hamburger chain (M) which uses communication in the 70 cm UHF band to control a type of relay system. Taking into account the great number of these restaurants, quite a number of Radio Amateurs have knowledge of this problem from their own observations.

Radio Amateur V was well aware of this, and experienced Reality when at a distance of a few kilometres a franchise of M was established. Regardless of the fact that LPD equipment was involved, the signals were of appreciable strength at V's location. V discovered that for some reason the Radio Inspector would not take on cases where Radio Amateurs received harmful interference from LPD's.

To counter this problem, the individual Radio Amateur can only resort to using his appointed frequencies as much as possible. However V decided to take a different approach and wrote a letter to restaurant M. In the letter V stated that his Radio service was interfered with by the transmissions of M, and asked M to cease transmissions or in any case to stop the interference.

Restaurant M did not even bother to a reply but instead went straight to the police and gave, notice that M's transmissions were interfered with and this was caused by V. Also, V repeatedly received phone calls from the supplier of M's LPD equipment and was told by F that M had many problems around the country. V was informed that F had already replaced at a number of other locations UHF LPD transceivers with infra red systems. F requested in no uncertain terms that V should stop what F called 'V's harmful transmissions'. V was then visited by two Radio Inspectors who informed him that they had inspected M's radio equipment and that it conformed to the Regulations, and they confirmed that no transmissions were made by V on the disputed frequencies.

Regardless of these findings F kept on making phone calls to V and said it intended to sue Amateur V with some hefty claims. Next V received notice from a lawyer acting for M as well as F suing V for damages, and curiously ordered V to make sure to stop interference to M, no matter who caused the interference. In an exchange of letters the undersigned answered the lawyer involved and made clear to him the legal position, i.e. in the disputed part of the 70 cm UHF band the Radio Amateur Service has Primary status and the LPD user can't claim any rights. (Note from Editor. In Australia Amateurs are secondary users of the 70cm band)

It appeared that V's problems were over., but unfortunately F and M's lawyer initiated proceedings against V a good six months later. interestingly only on behalf of F. The lawyer claimed an exorbitant amount of damages allegedly suffered by F. For F had to replace M's UHF transceivers with IR equipment. The case had a happy ending for *Radio Amateur* V for the Judge ruled that F had no grounds to pursue his claims.

For us Radio Amateurs this is of the utmost importance, as a supplier of LPD equipment cannot claim damages on behalf of his clients when they complain of interference problems. Although the judgment only related to this particular case, it is no surprise that M did not pursue the matter, this was made clear from the correspondence the lawyer of F handed over to the Judge. From these papers it emerges that M was informed by the Radio Inspector that M as a LPD user has no right whatsoever to lay claims against Radio Amateur V, who is licensed and is the Primary User.

Radio Amateurs can conclude from the Judgment that their position in this part of the spectrum is made clear and reinforced legally. Also in discussions with the two radio clubs and the authorities moves have been made to set aside some frequencies for LPD use outside the Radio Amateur band. These developments are a happy outcome, and let's hope, might lead to a substantial decrease of the LPD plaque.

Meester J.W.A.M. te Broekhorst. Boskamp 79, 3828VV, Hoogland.

[*Meester* translates as Master In Law]

World War 2 Clandestine Communications

Part 3

Clandestine Listening Stations

by Malcolm R Haskard VK5BA

For clandestine operators in the field there needed to be constant monitoring of both agents allocated frequencies and emergency frequencies. Secret receiving stations were established in key locations, each station usually consisting of a bank of good quality communication receivers as well as transmitters. In the case of SOE each operator had their own individual frequency and often a transmit time schedule. With the Coastwatchers there was the standard "x" frequency that all could transmit on, but in addition to this some special operations, particularly where the portable ATR 4A equipment was used, had their own allocated frequency. With the SOE, listening stations were set up at Darwin and Melbourne while the Coastwatchers organisation had their HF listening stations at Darwin, Port Moresby, Rabaul and Thursday Island.

In addition to the constant monitoring of agents and coastwatcher reports there were the secret listeners, stations who continuously monitored the airwaves of the enemy, particularly the kata kana Morse code used by the Japanese. The kana Morse was based on 46 phonetic sounds of the Japanese language. In addition to these there were a further 25 other sound changes, giving a total of 71 kana Morse code symbols to be learned. This took some eight weeks or so to achieve even for a Morse operator already competent at 25 wpm. The initial RAAF group completed their training in Melbourne as inceptors of Japanese Morse messages in September 1941 and moved to the Darwin RAAF Aerodrome where they operated in secret using two Kingsley AR7 receivers. Messages received, both in plain kana and encrypted kana were secretly forwarded to Melbourne. This was the beginning of the RAAF Sigint Force.

In February 1942 Australia came under Japanese attack and with the Darwin RAAF Aerodrome a prime target. The Signet group was instructed to disperse and operate from civil air radio stations around northern Australia. This meant sharing receivers with the civil authorities rendering Sigint operation ineffective for constant listening was needed. Thus by March 1942 it was decided to set up the Sigint section at Townsville, a site where the skip distance for the operational frequencies used by the Japanese would provide favourable listening conditions. The Townsville group was known as Wireless Unit No. 1.

By Mid 1942 the number of trained operators had increased to near 30. General MacArthur's Central Bureau was well aware that with the steady advance of the Japanese, kana traffic had increased rapidly necessitating additional Wireless Units. Prime Minister Curtin approved two more Units and early 1943, No.2 Unit was set up at Darwin and a forward detachment of No. 1 set up at Port Moresby, the whole unit transferring later that year. In all six Wireless Units were set up in secret to monitor and give advance

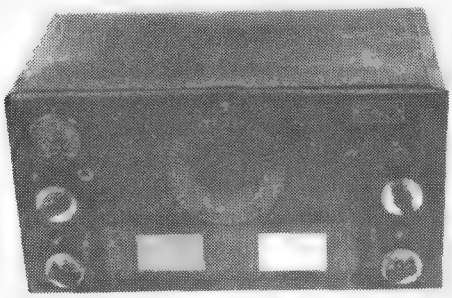


Figure 1a

Figure 1 (a) and (b)
The National HRO Receiver (a) and with plug in coils and power supply (b).
(Peter Holland collection)

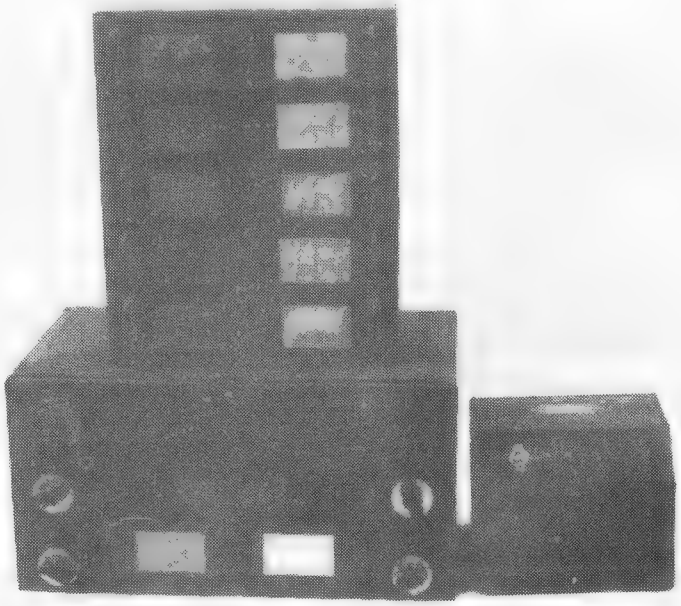


Figure 1b

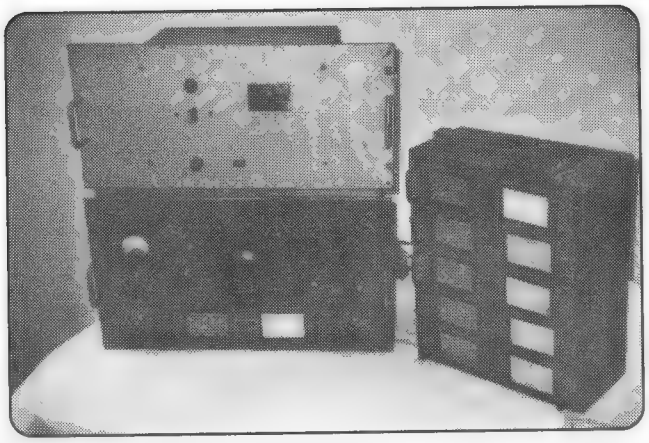


Figure 2
The rack version of the AWA HRO clone, the AMR 101, showing receiver, power supply and coil box. (Peter Holland collection)

warning of Japanese movements and operations (A seventh was requested, but with the war coming to a close it never eventuated). General MacArthur was very conscious of the work the Wireless Units were doing, providing vital information for the war effort, and so he endeavoured to keep them under his control and place then as near as practical to the front lines on the islands to our north and north east, including the Philippines. There was also good cooperation between the Australian Wireless Units and the United States Mobile Intercept Units, camps often being adjacent to each other. So secret was the work of the Wireless Units that it was only a decade ago that detailed information became available on their operations and achievements.

Clandestine operation communication receivers

1. National HRO receiver

While a number of set brands were used all major types have their genesis through the developments undertaken in the early 1930s by the National Company in Boston, USA. In 1934 they produced the first HRO prototype (advertised on the inside back covers of the October and November 1934 issues of QST), the designer, James Millen, being a mechanical engineer ensured that mechanical aspects of the receiver were the best possible, including the 20:1 reduction drive with its vernier, sturdy chassis construction with plug in coil boxes. Electronically this general purpose single conversion communications receiver consisted of two RF stages, a mixer with separate oscillator, two IF stages with a crystal filter, detector, BFO and audio amplifier. The production model using 2.5 volt valve heaters came out in 1936 and set the bench mark for all future communication receivers. With a full set of coils the receiver covered frequencies from 50kHz to 30MHz (See Table 1 below), with a small frequency gap around the 455 kHz IF frequency of 430 to 480 kHz. An S meter and bandspread were included. Figure 1 shows a typical National HRO receiver. Controls, starting from the top left hand corner and moving clockwise are, S meter with two small controls beneath it, the left side being the S meter switch and the right side the phone jack. Centre was the tuning dial, and moving clockwise the pilot light, IF trimmer (selectivity), crystal filter switch and phasing control, RF gain, coil box plugged in, BFO, AVC switch and audio gain.

Several variants were produced of the HRO during the WW2 period. The valve lineup had already been changed to the 6 volt, 6 pin UX series (6D6, 6C6, etc.) in the Model HRO-M, and then in the 1940s these were replaced by metal octal base types, the Model HRO-5. A typical line up was 6K7s for the RF and IF amplifier stages, 6J7s for the mixer, oscillator and BFO, 6SQ7 detector and first audio amplifier and the power output stage a 6V6. Basic receivers without the bandspread and S meter were often called the HRO - junior. In UK some Royal Navy versions had different IF frequencies while still others with shielded aerial inputs, a system switch and modified plug in coil, were used by the Army as direction finding receivers. Although nine standard coil boxes were available, sets were normally only supplied with types JA to JD. Aerial input impedance was approximately 500 ohms, balanced or unbalanced, for these coils.

Coil Set	Frequency Range
J	50-100 kHz
H	100-200kHz
G	180-430 kHz
F	480-960 kHz
E	900-2050 kHz
JD	1.7-4.0 MHz
JC	3.5-7.3 MHz
JB	7.0-14.4 MHz
JA	14.0-30.0 MHz

Table 1. Coil sets available for the National HRO receiver range.

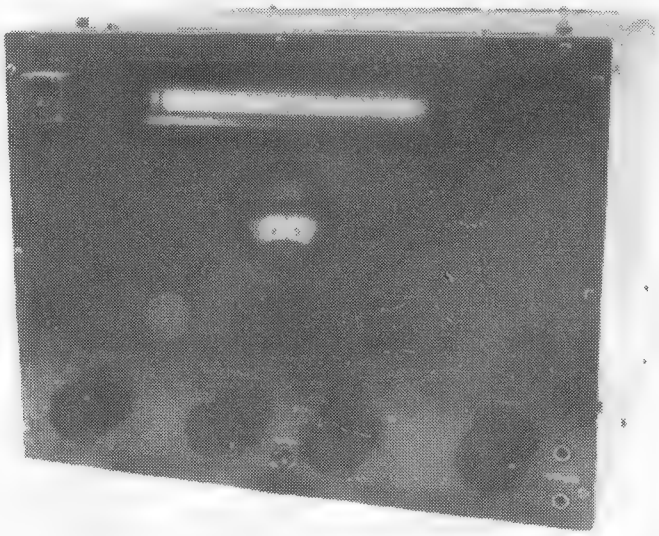


Figure 3
The Marconi CR 100 Receiver, Navy version. This model has a distinctive blue front panel and a radar interference suppression (RIS) socket and control to null out the buzzing interference of the radar transmitter. (Peter Holland collection)

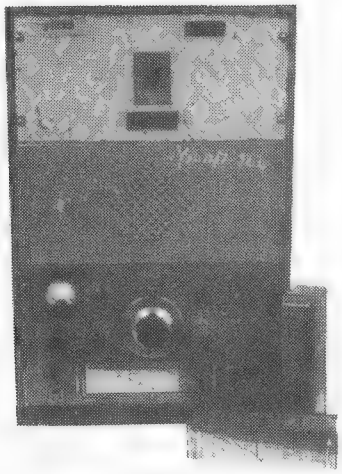


Figure 4a

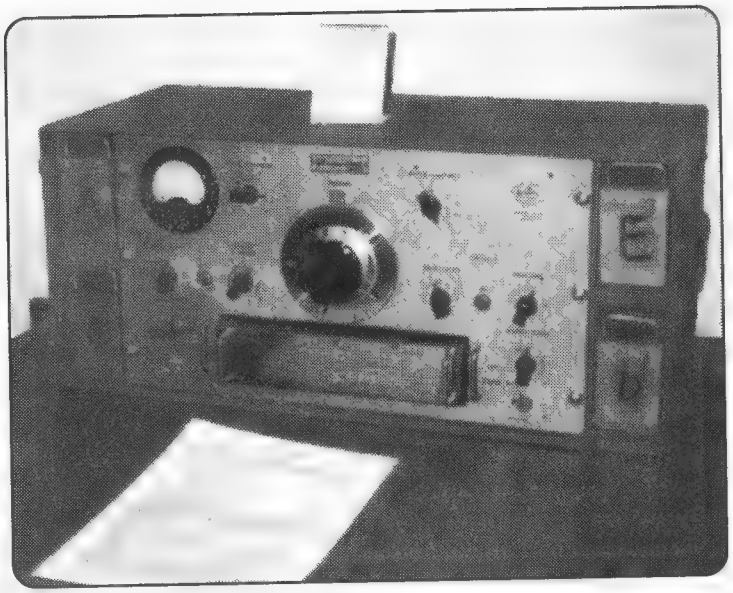


Figure 4b

Figure 4 (a) and (b)
The Kingsley AR 7 Receiver both rack (a) and table top (b) versions. The RAAF serial number has been written in large letters on the rack mounted speaker. (Peter Holland collection (a) and Royal Signals Museum collection, courtesy of Neil Wain (b))

Each plug in coil box had on the front panel, on the LHS, a graph of receiver dial numbers against frequency and on the RHS a table where using a chinagraph or similar pencil the operator could record specific frequencies and dial number readings.

Two separate power supply modules were available, a mains operated unit (115v and 230v AC) and a vibrator supply for 6 volt battery operation, later with the HRO-5 model a 12 volt battery version was also made available, having special connections for the valve heaters. The receiver came in two styles, firstly the table style where the receiver, power supply and speaker were each housed in separate steel boxes, unused coil units stored in wooden boxes a 3 and 5 coil storage box being available and secondly, a rack mounted version, the receiver at the bottom and above it a combined 5 coil box storage unit for the coils not in use, speaker (above the coil box) and power supply unit. The weights of both receivers alone were just over 50 lb., while case sizes were 17.25"W x 9"H x 12"D for the table model and 19"W x 8.75"H x 12'D for the rack model. During the war AWA manufactured National HRO receiver clones for the US Forces the separately housed version called the AMR100 and the rack version the AMR101 (Figure 2). These receivers only covered the frequency range 550 kHz to 24 MHz.

Manual supplied for these receivers provide little information by way of detailed specifications. Basic factors such as receiver sensitivity, selectivity, audio power out and mains voltage range do not get a mention. This is surprising since the HRO receivers were the top of the range of their day and therefore very expensive.

2. Marconi CR100

In 1939 Marconi decided it was time to make a receiver that would offer the Royal Navy a British alternative to the HRO which was widely used. Design work commenced that year, the prototype assessed in the Spring of 1940 and the first batch of 500 model CR100s made in 1941. While the mechanical design is distinctly different to the HRO the electronics is similar. Two RF amplifiers, mixer with separate oscillator, three IF amplifiers at 465kHz, detector and triode first stage audio amplifier, BFO and power outputs stage. A mains power supply (200-250v AC) is included in the same case. A separate DC supply, consisting of a 6 volt battery and rotary converter, was also available. Typical octal valve line up was KTW 62 (or 6K7) for 1st and 2nd RF amplifiers, X66 (or 6K8) mixer, KTW 62 (or 6K7) local oscillator, KTW 62 (6K7 or 6J7) for each of the three IF stages, DH 63 (or 6Q7) signal detector, AVC diode and audio amplifier, KTW 62 (6K7 or 6J7) the BFO, KT 63 (6V6) audio power output and U 50 (5Y3 or 5Z4) full wave rectifier.

Two major mechanical differences to the HRO was firstly that there were no plug in coil boxes, but a front panel band change switch and secondly that the four section tuning condenser was rotated by a spring loaded gear train (coarse tuning reduction 25:1 and fine tuning 170:1) incorporating a logging scale and a cord driven linear frequency scale, the latter on a drum which rotated to the correct frequency scale when the band switch was operated. The frequency range, in six bands, was 60-160 kHz, 160-420 kHz, 500kHz -1.4MHz, 1.4-4.0MHz, 4.0-11.0MHz and 11.0-30 MHz. Aerial input impedance provided was 100 ohm, balanced or unbalanced and a "high" input impedance, while the sensitivity for a 20dB signal to noise ratio was typically from 1 to 4 micro volts over the frequency range. Four IF bandwidths were available, a switch on the front panel allowing selection of 100, 300, 1200, 3000 or 6000 Hz. The narrow bandwidths employed a crystal filter.

Over the years some 8 versions of this set were produced, including a special Navy type B 28 having radar interference suppression (RIS) facilities. Figure 3 shows a photograph of the receiver (the Navy version), housed in its metal case 16"W x 12.25"H x 16.5"D. Standard panel controls, going from left to right were - Top row, HF gain, (the red knob in Figure 3 is the RIS control on Navy sets), tuning (coarse and fine) with the

logging scale immediately above and direct reading frequency scale above that, aerial trimmer and BFO. Bottom row, IF bandpass switch, band change switch, mains switch (lower centre), 5 position operational switch (MOD: Man or AVC, OFF, CW: AVC or MAN), LF gain and two phone sockets. Overall weight was 82lb.

3. Kingsley AR 7

Howard Kingsley the Managing Director of Kingsley Radio Pty. Ltd. had been a Major in the Army, transferring into the Flying Corps during WW1 where he was a fighter pilot. With the approaching WW2 he was keen to supply communication equipment to the armed services, initially trying to convince the Army by demonstrating his portable HF transceivers. While the Army were not interested, the RAAF were and purchased his portable equipment called the ATR1. About that time the Air Force issued a specification for a communications receiver and wishing to continue his success Howard Kingsley strongly invested funds to win this contract. The National HRO receiver, with its robust construction and excellent performance, seemed an obvious starting point for this development, resulting in an Australian made look alike prototype called the KCR 11. Kingsley radio won the contract and the initial order was for 20 units. The receiver was given the RAAF designation AR 7 and during the war some 3200 were made for the RAAF and several customers, including the Dutch Navy, Dept. of Civil Aviation and an Australian Army variation (Australian Reception Set No. 1).

The AR 7 was normally a rack mounted unit (Figure 4), consisting of three modules, the receiver at the bottom, with loud speaker above it and the power supply at the top. The Kingsley look alike HRO receiver was of similar sound mechanical construction using copper/cadmium plated steel sheet, a locally made 20:1 vernier tuning dial while the five plug in coil boxes were made from nickel plated copper sheet attached to a steel front panel. As shown in Table 2 the receiver range is from 140 kHz to 25 MHz with a gap either side of the 455 kHz IF amplifier.

Coil Set	Frequency Range
Band A	140-405 kHz
Band B	409-1430 kHz
Band C	1.420-4.3 MHz
Band D	4.25-12.5 MHz
Band E	12.5-25.0 MHz

Table 2. Coil boxes available for the Kingsley type AR7 receiver

The octal base valve line up were 6U7 for the 1st and 2nd RF amplifiers, 6K8 mixer and oscillator, 6U7 1st and 2nd IF amplifiers, 6G8 second detector, AVC and audio amplifier, 6C8 BFO and 6V6 audio power output. The power supply, which can accept either 230-240v AC or 12v DC from a battery as input (selected using a switch on the power supply front panel) uses two 6X5 full wave rectifiers.

Concluding Remarks

It is now over five decades since WW2 concluded and many aspects of the clandestine HF communication equipment used has been lost, destroyed or forgotten. In preparing this series I have read and inquired widely, at times finding variations in detail, yet I believe that what has been reported is correct. However, I would be both interested and pleased to hear from others on the topic and I may be contacted via my QTH or work email - malcolm.haskard@unisa.edu.au.

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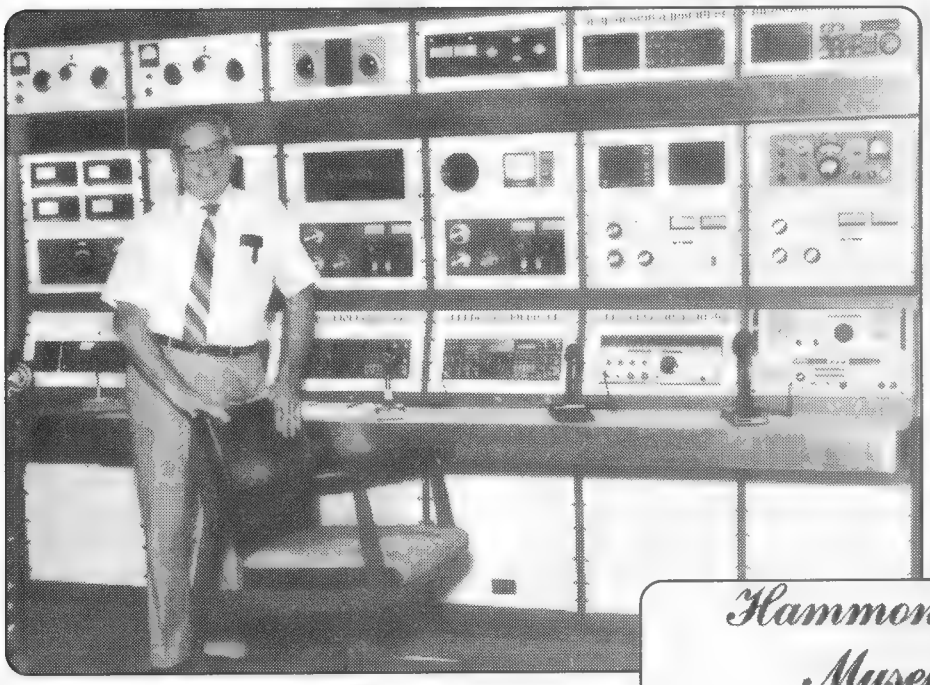
New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of January 2001

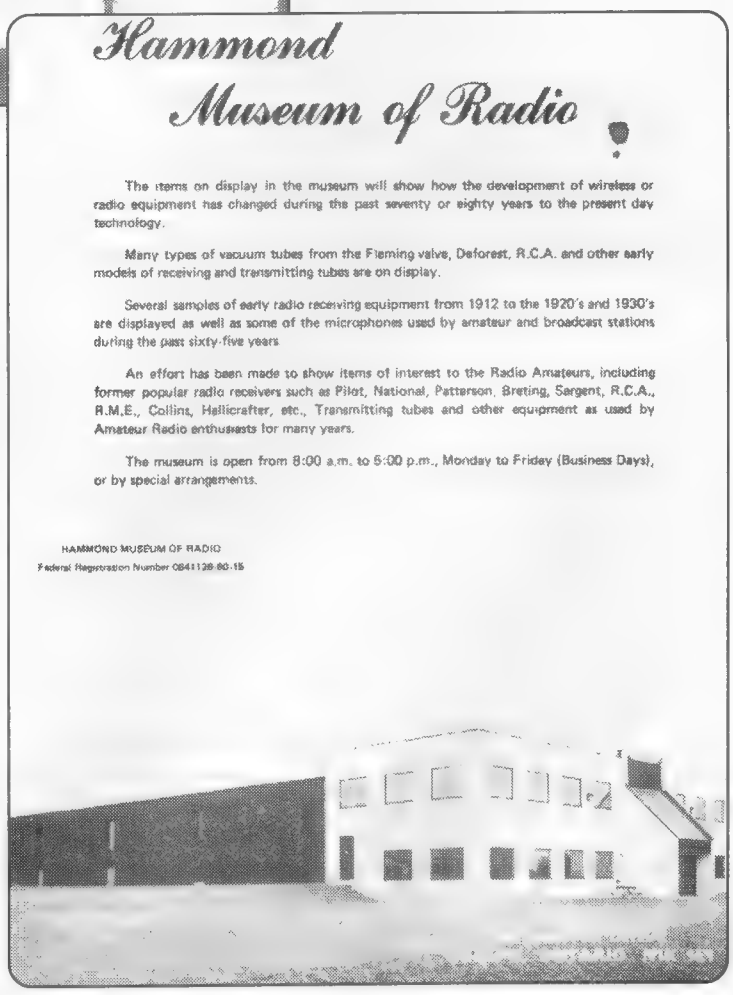
215894	MR R L BONNEY
L31557	MR D PLUMB
VK3JOO	MR N LAIDLAW
VK3KGM	MR G JEFFREY
VK3NOV	MR J ONCKEN
VK3ZQ	MR R RUTLEDGE
VK7LH	MR L R HILLER

Silent Key

Fred Hammond VE3HC



Fred Hammond died peacefully on November 7th 1999. Fred had been an Amateur for more than 70 years. He was born in Guelph, Ontario Canada December 15,1912. He started building Radios in 1923 and became licenced in 1929. He co-founded Hammond Manufacturing Co. Ltd. This company is still family run and has subsidiaries in US and UK. Hammond cabinets, transformers and components have a worldwide reputation for quality and reliability.



Hammond

Museum of Radio

The items on display in the museum will show how the development of wireless or radio equipment has changed during the past seventy or eighty years to the present day technology.

Many types of vacuum tubes from the Fleming valve, Deforest, R.C.A. and other early models of receiving and transmitting tubes are on display.

Several samples of early radio receiving equipment from 1912 to the 1920's and 1930's are displayed as well as some of the microphones used by amateur and broadcast stations during the past sixty-five years.

An effort has been made to show items of interest to the Radio Amateurs, including former popular radio receivers such as Pilot, National, Patterson, Breting, Sargent, R.C.A., R.M.E., Collins, Hallicrafter, etc., Transmitting tubes and other equipment as used by Amateur Radio enthusiasts for many years.

The museum is open from 8:00 a.m. to 5:00 p.m., Monday to Friday (Business Days), or by special arrangements.

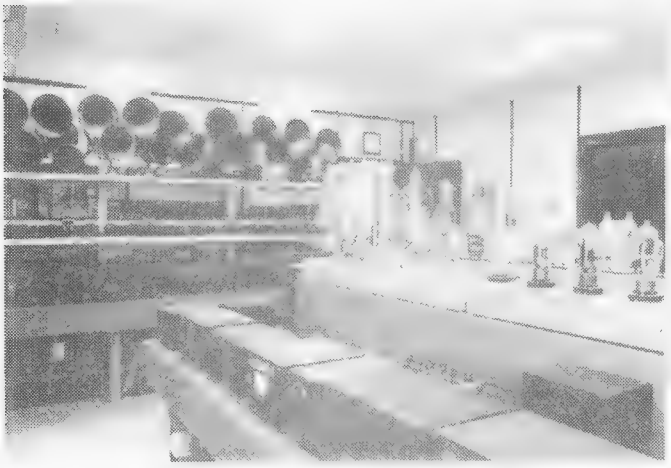
HAMMOND MUSEUM OF RADIO
Federal Registration Number 0841128 80-15

Fred's contribution to Amateur radio is almost legendary. He was honourable, patient and knowledgeable. He contributed much to Amateur Radio in Canada and worldwide. He was a philanthropist and generous benefactor to the world wide Amateur community.

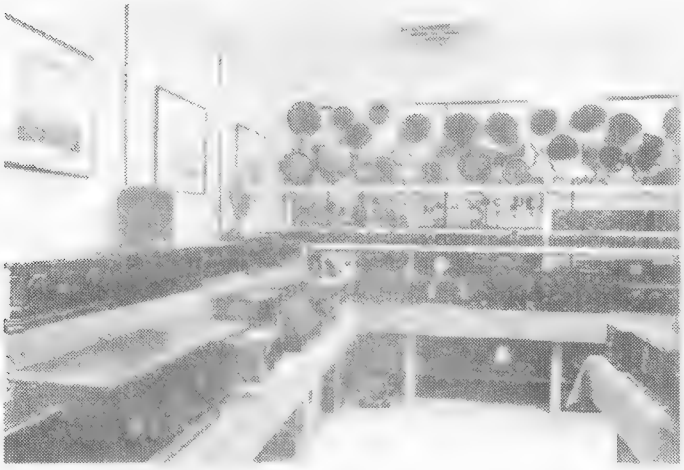
Fred set up the Reginald Fessenden Memorial Station in Knowlton QC, founded the Guelph ARC in 1946. In 1977 he was Radio Society of Ontario Amateur of the Year and received the ARRL Certificate of Merit. In 1979 he was CRRL Amateur of the Year. He donated hundreds of prepunched cabinets to the Canadian National Institute for the Blind ARC for special CNIB equipment. He supplied and shipped to Geneva in 1979 the equipment to put 4UIITU on air for WARC. He donated equipment with Tom Wong VE3BC to put BY1PK, China's first Amateur Radio station on air. He provided all the custom made cabinets for the refurbishment of W1AW in 1989. In the 1950s he organised several Dxpeditions. He provided much needed material to organisations like the Jamaican Red Cross and QSL cards for CI8C in support of the 1986 Canadian /Russian Trans Polar trek and CY3IARU the Special event Station at the IARU Region Conference in 1995.

He President of the Quarter Century Wireless Club Chapter 73 from 1980-82 and Director of QCWA 1986-90. In 1988 he received the Special Achievement Award at the Dayton Hamfest.

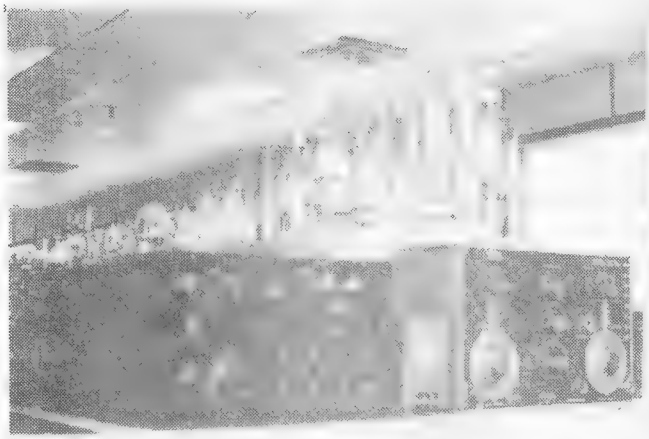
Continued on page 19



EARLY NATIONAL AMATEUR RECEIVERS
AND COLLECTION OF ATWATER KENT MICROPHONES & HORNS

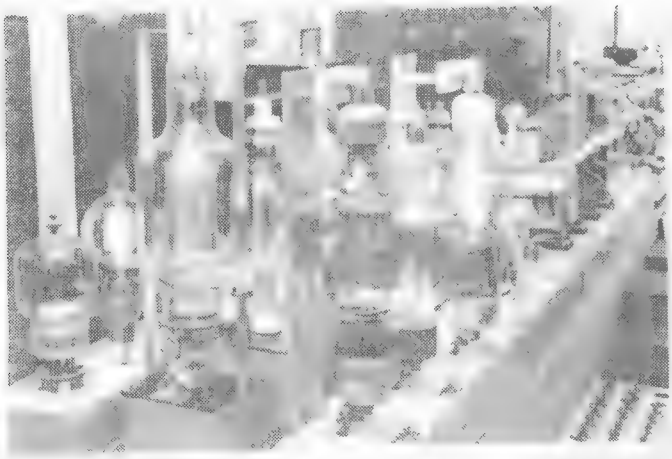


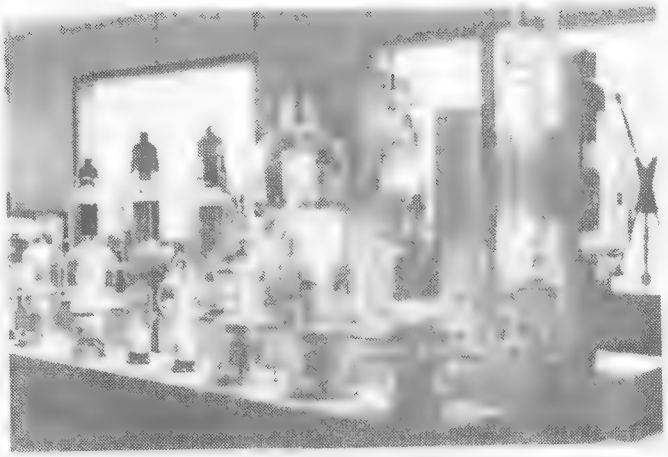
COLLECTION OF VARIOUS OLD TIME RECEIVERS
AND 1929 ROTARY WHEEL TELEVISION



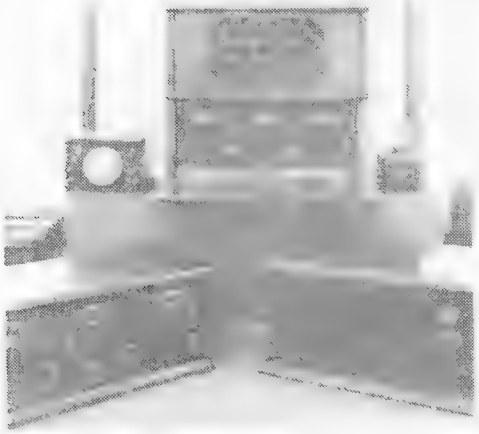
FEDERAL 61 RECEIVER (1923)

IP-500 (1918)

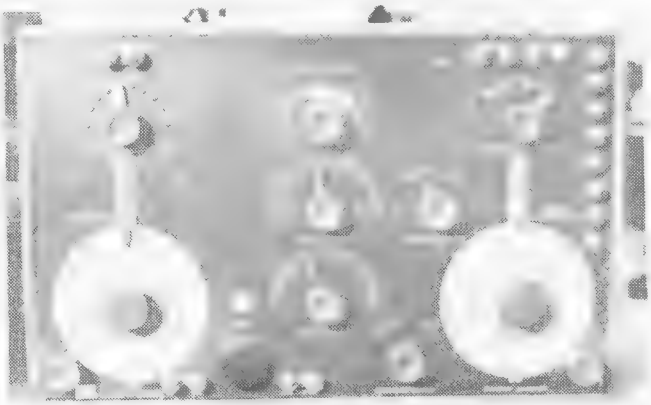




COLLECTION OF OLD AMATEUR TRANSMITTING TUBES

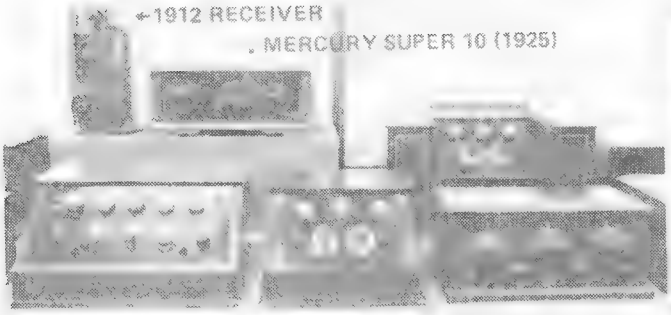


←1912 RECEIVER



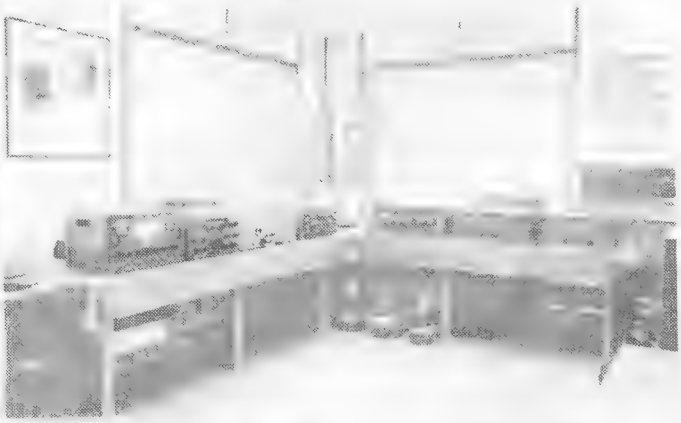
IP 500 (1918)

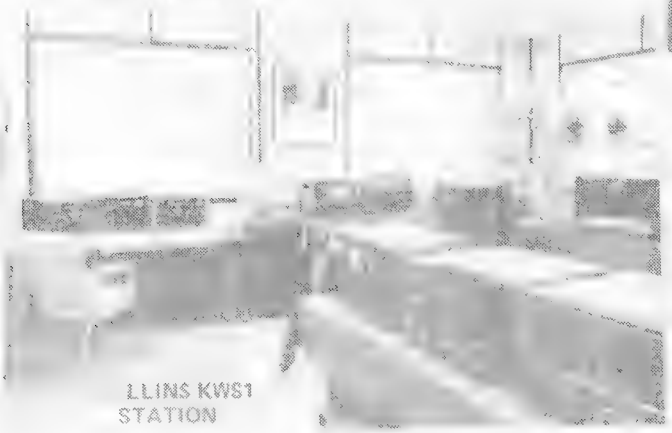
. MERCURY SUPER 10 (1925)



EARLY COLIN B. KENNEDY RECEIVERS (1925)

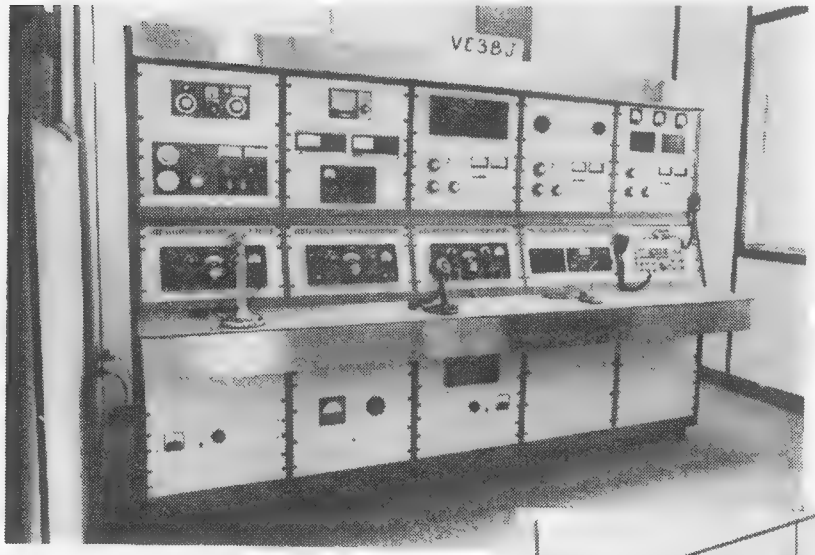
REGENT 1924





LLINS KWS1 STATION

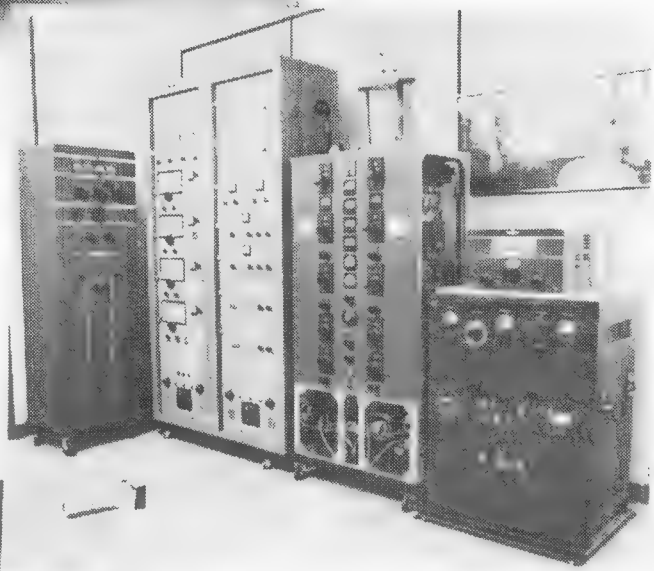
ATTERSON FR 10 (1933)



AMATEUR STATION VE3BJ

ACTIVE ON
10 - 15 - 20 - 40 & 75 METERS

5 ELEMENT TELREX BEAMS
FOR 15 & 20 METERS

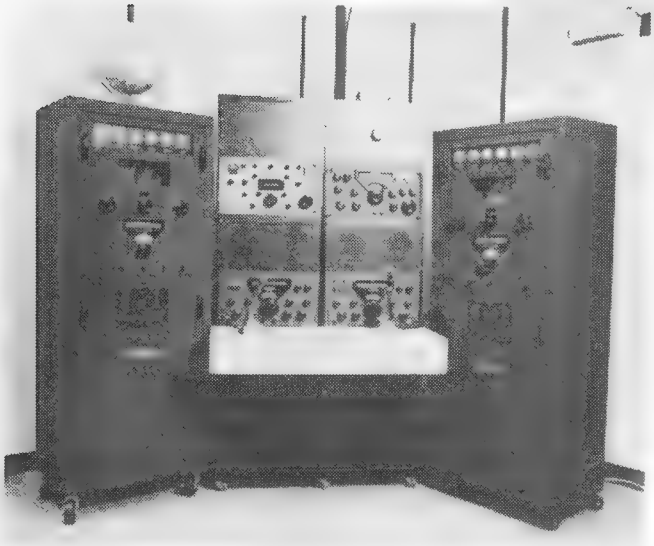


LEFT TO RIGHT:

COLLINS 30K (1946) – 500 WATT CW
375W PHONE

MARCONI TRIPLE DIVERSITY RECEIVER

R.C.A. AT3 TRANSMITTER AND
HALLICRAFTER BC610



COLLINS KW1 – 1000 WATT
AM TRANSMITTERS (1952)

WITH

COLLINS R390A, 51J4
AND TWO 75A4 RECEIVERS

In January his Hammond Museum of Radio was opened. This contains Fred's large collection of radio equipment dating back to the turn of the century. This is probably the largest and certainly the finest collection of its type in the world. Fred's knowledge of the history of radio development was as vast as his collection.

Fred's unique record of constant support of the Amateur Service and for individual Amateurs throughout his long life is virtually unparalleled.

Drawn from The Canadian Amateur Jan Feb 2000.

The material, shown here, is taken from the Hammond Museum of Radio Brochure.

Thanks to Jim Davis VK7OW for this information. Jim was lucky enough to meet Fred Hammond when he visited Ron Harwood VK7RH some 20 years ago

ALARA

Christine Taylor VK5CTY
VK5CTY@VK5TTY or geencee@picknowl.com.au

ALARA Contest Results

Gwen VK3DYL	203	Top score overall, Top score VK YL Top phone score,Top VK3 ALARA member
Bev ZLIOS	186	Top DX YL, Top ZL ALARA member
Judy VK3AGC	153	
Susan VK7LUV	130	Top VK Novice, Top VK7 ALARA member
Elizabeth VE7YL	130	Top VE ALARA member
Meg VK5YG	111	Top VK5 ALARA member
Alex ZL I BVK	104	Top ZL OM
Bev VK4NBC	92	Top VK4 ALARA member
John VK3MGZ	75	Top VK OM
Celia ZLIALK	74	
Marilyn VK3DMS	74	CHECK LOG
Christine VK5CTY	61	
Trevor VK3PP	55	
Dot VK2DB	49	Top VK2 ALARA member
John VK5EMI	40	
Alan VK7JAB	35	
Stan VK3JSS	25	
Yohko JA8GIA	24	Top Japan YL nonmember

The number of logs is not marvellous but it was good to have several more logs this year, some positive thinking in the new century, and perhaps a little impetus from the International YL Convention in Hamilton last October helped. We were pleased by number of OMs who contacted us during the contest - five of whom took the trouble to write up and send in their log. What about the rest of you!! Every log counts, you know.

There was a bit of a problem with the address for the logs, this year. Please do check that you have it right- whenever you send in a contest log. It is such a waste if your log doesn't arive after all your effort.

Congratulations to Gwen VK3DYL, the overall winner and to all the section winners.

Unfortunately no one submitted a CW log so there is no winner of the Florence McKenzie Trophy.

Please take note the Contest in 2001 will be held on *the last weekend in August*. This should give us better propagation conditions than November. The times the Contest will run are still to be decided. You will be advised in this column and in the ALARA Newsletter.

Thank you to everyone who took part - we hope to hear all of you again this year along with hopefully many others.

Recognition Of The Amateur Licence In Electro-technology Courses

In the last few months a number (at least 25) of amateurs have become accredited Assessors, qualified to assist holders of the amateur theory licences to gain an exemption from the first year of the Electro-technology courses run by the TAFE colleges after only a small amount of additional work.

Anyone wishing to obtain this exemption can apply to these people, complete some practical projects and show an understanding of the Occupational Health and Safety rules that apply within the workplace, to the satisfaction of the assessor, to gain a certificate that can be presented to the TAFE.

This accreditation has been agreed to by the TAFE authorities after consultation with both employers and the unions and recognises that those who work to gain their amateur certificates have learned many of the aspects of electro-technology that are part of the Level 1 courses.

The hope is that this accreditation will encourage more young people to enter the field of electro-technology as a career and assist those amateurs who, perhaps gain their licences while still at school to see a real benefit for making the effort at a young age. It is likely they will finish their electro-technology courses ahead of their peers and go into the workplace at a qualified wage earlier than otherwise.

There are accredited assessors in all the mainland states, at this time. The list of names is available from your local WIA. In VK5 there are two YL assessors, Mary VK5AMD and Christine VK5CTY, but so far all the other assessors are OMs. How about you ladies, make some enquires and get involved.

From Gwen VK3DYL

Icebergs Ahoy!

Mid-January my son David and I boarded a QANTAS Boeing 747 filled with lots of excited passengers (all loaded down with cameras) and headed south to Antarctica for the day. This turned out to be the quickest 12-hour flight I have ever been on - nearly the equivalent of flying non-stop Sydney to Los Angeles but much more fun! Strangers spoke to other strangers, swapped seats, elbowed each other out of the way to get better photographic angles through the windows and rushed from one side of the aircraft to the other as another magical view unfolded.

We flew over the South Magnetic Pole where I watched my compass do whirlies, then headed to the French base, Dumont d'Urville but that was covered with cloud which extended inland so, for safety's sake, we took one of the other 17 alternative routes and followed the coastline to the Australian base at Casey. It was fascinating looking down at the ice

floes, the deep crevasses, the pack ice and the huge icebergs drifting out to sea.

As we neared Casey base our Captain contacted the station and patched the ensuing conversation into the aircraft's PA system. We were asked to keep an eye out for the Norwegian ice ship, the M. V. Polar Bird which was on its way to deliver personnel and supplies to Casey but which had got stuck in the ice 2 weeks previously and was waiting for an ice breaker to come and get it out. Visual and voice contact was then made with the ship, which relieved the monotony for a short while for those on board. (A couple of days later a news flash reported that there had been "good storms ' in the area which had freed the ship from the ice and the voyage leader remarked that it was "one of the few times when a storm was welcomed at sea!")

Reluctantly our 4 hours of flying over the Antarctic Continent came to an end and we had to head back to Melbourne. A camera in the cockpit transmitted pictures onto the cabin video screens and various lecturers in Antarctic life gave excellent commentaries so there was rarely a dull moment. I know that 2 other ALARA members, Christine, VK5CTY, and Mary, VK3FMC. have done similar trips and I'm sure the 3 of us can heartily recommend it as a very unique experience.

My trip was almost 20 years ago but I still remember every moment of it. If anyone has the chance of a flight like this, my advise would be "go for it"!!

Change Is In The Air

Keep your ears peeled for some possible changes to the classes of radio licence in the UK. Both the RSGB and the RA are concerned about the falling numbers of licence holders, particularly of young license holders and are suggesting some ways in which people can be encouraged into our hobby.

Remember what happens in one country often happens in others, later.

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...Propagation and the Great Australian Bight

continued from page 7

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The Way It Is

Russ White VK3MWR

I, as a "know little novice", like to think that this is the way it is in Amateur Radio. In other words, what Amateur Radio is all about?

I called into a fellow club member's place of business on what was primarily a social call. He had customers and as a retired businessman I understood and tried to stay out of the way. He went about the business giving each customer due care and attention and made sure each was satisfied. After the last customer had left we got to socialising and compared notes so to speak - family, holidays, club equipment and our own equipment. On our own gear I complained about chores I had been doing and still had to do to get the 2 metre rig up and running again. There was nothing wrong with the rig itself, only the antenna or the coax. Birds kept landing on the antenna and bending it at right angles to the vertical. I knew I could manage the coax without too much trouble but the antenna was the problem.

"Here, look in this box. There are some odd bits that might do." my friend said.

I picked up one item that was a plain short heavy rod with screw-on mounting nut.

"That's what you need but you need a ground plane with it." he said.

He proceeded to explain what he was talking about and then proceeded to take a large flat steel washer and soldered 4 rods equally spaced around the washer and all bent to about 45 degrees to the flat side of the washer. He then explained how to position this device (It had advanced to the device stage now).

"Give it a try," he said.

Keep in mind; I had called in as a friend and a fellow ham not looking for anything. I was treated as a friend and a fellow ham in the spirit of Amateur Radio. I want to thank him and to say that Graham Brennan, VK3KCS is a mild unassuming fellow not looking for the limelight. He typifies what I believe Amateur Radio is all about. I hope he won't blush and if he does he can always say its windburn from riding his new Harley. Thanks Graham

(Submitted by Russ White, VK3MWR who also indicated he was happy that when originally published, his name was not credited. Russ is also a member of the WIA.)

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Club News

News from the Moorabbin & District Radio Club

What's happening down at the Club?

Members at the January MDRC meeting got an inside look at how APC News is produced each week. Keith VK3JNB, Peter VK3YE and Tony VK3JED gave a detailed presentation on how the news is produced and distributed. The MDRC's new amateur radio and club promotion brochure was also launched. Copies have already been distributed to local libraries and will be used at hobby show displays.

The MDRC's regular weekly and monthly meetings include the following:

- Tuesday morning group, 10am at the Clubrooms
- Tuesday evening hobby group, 7:30pm at the Clubrooms
- Social meeting, 8pm, first Friday of the month at the Clubrooms (ie March 2, April 6, May 4)
- General meeting, 8pm, third Friday of the month at the Clubrooms (ie March 16, April 20, May 18)

We usually have a guest speaker at our general meetings. Because *Amateur Radio* usually now reaches readers late in the month, it is seldom possible to provide timely advice on presentation topics through this column. Instead, keep listening to *APC News* for this information.

Hear *APC News* on-line, any time

Melbourne's *APC News* has had a busy start to 2001, with several improvements being introduced. These include:

Availability of sound recordings via the web

If you missed the live transmission, log on to http://quest.apana.org.au/~tl/vk3jed/apcnews and hear the week's bulletin in MP3 format. Recordings are normally available shortly after the live bulletin goes to air on Wednesday evenings. This service is kindly provided by Tony VK3JED has become very popular with individual listeners and interstate news services alike.

APC News on ATV

Thanks to the assistance of David VK3JDA, local amateurs can now watch APC News live via the VK3RTV Melbourne ATV repeater. VK3RTV's output is on 444.250 MHz – receivable as Channel 16 on many UHF TV sets. Keep listening for further details of these ATV experiments.

New look for APC News website

With the theme 'Getting APC News is as easy as 1, 2, 3, 4, 5, 6', the improvements make it easier to find out about the six ways to receive APC News each week.

A significant milestone was passed earlier this year, with our 100th bulletin going to air. The best way to show your support for APC News is to call back each week and submit items to the addresses given in the news.

MDRC member co-ordinates Australia Day repeater link

Dozens of VK3s enjoyed chatting to amateurs interstate and overseas during the Australia Day internet hook-up of repeaters around the nation. The event went smoothly, thanks to the efforts of national co-ordinator Pete VK2YX and link stations in most capital cities. Melbourne's link station was Tony VK3JED operating through the VK3RSR repeater on 146.975 MHz. Tony's station operated faultlessly, with very few link drop-outs. This aspect of amateur radio is progressing very rapidly, and we hope to bring news of further developments via APC News.

Radio on Rails next month

Yes, it's on again! Two metres and seventy centimetres will again be full of signals from tram and train mobile stations during this year's Radio on Rails Fun Day on April 8.

Radio on Rails encourages amateurs to operate from trains and trams around Melbourne. Participants get to experiment with VHF/UHF portable equipment and antennas and demonstrate amateur radio to the general public. Entrants also meet other contestants, thanks to the unique 'eyeball contact' rule. Sections exist for both radio amateurs and listeners.

The rules for *Radio on Rails* appear below. There are a few minor changes from last time, mainly relating to scoring for contacts involving crossband repeaters. Both home and train/tram mobile stations may enter. Participants are invited to meet for lunch afterwards at a city venue to be arranged on the day.

MDRC Radio on Rails Fun Day Rules

Object: To make amateur radio contacts from trains and trams around Melbourne.

Date: Sunday, April 8, 2001

Time: 9am - 1pm

Bands: 433.000 – 440.000 and 145.225 – 148.000 MHz only

Mode: FM voice

Sections:

A. Transmitting Mobile (in train or tram, also includes waiting at railway stations or tram stops)

B. Transmitting Home (includes operators at home or in a car)

C. Listening Mobile (in train or tram, also includes waiting at railway stations or tram stops)

D. Listening Home (includes listeners at home or in a car)

Contacts: Train or tram mobile stations may work (or hear) any station for points. Home station entrants may work (or hear) train or tram mobile stations only for points.

Repeat contacts: Repeat contacts are valid for scoring purposes provided at least one hour has elapsed between them. In most cases, stations may be worked *once per hour per band*. The exception is for contacts via crossband 2m/70cm systems, such as the VK3RMN repeater, or satellites operating in full duplex. In these cases, repeat contacts are permitted, but stations may only work each other *once per hour, irrespective of band*.

Use of repeaters and satellites: Contacts on repeaters and satellites count for scoring purposes.

Exchange: Train or tram mobile stations give their nearest railway station, tram route number or tram stop location (if waiting). Home stations give their suburb. No serial numbers are required.

Eyeball contacts: Stations in Sections A and C may claim extra points for 'eyeball contacts'. An eyeball contact is defined as one where participants can shake hands with one another on a train, tram, railway station or tram stop.

Prearrangement of eyeball contacts before the contest start time is **not** allowed. However, eyeball contacts may be arranged during the contest period on two metres or seventy centimetres FM only. Unlike with radio contacts, entrants cannot claim extra points for repeat eyeball contacts with the same person. Amateurs or SWLs not active in the contest cannot be claimed as eyeball contacts.

Scoring: Score 1 point per station worked (or heard) on each band. Total score is the number of radio contacts made (or stations heard) on all bands plus the number of valid eyeball contacts made.

Logs: Logs should show time, frequency, callsign and exchanges for each contact. Eyeball contacts should also be logged. Train or tram mobile entrants should staple their used Met ticket to their log. Where this is not practical (eg ticket remains current after the contest), a signed photocopy of the ticket will be accepted in lieu.

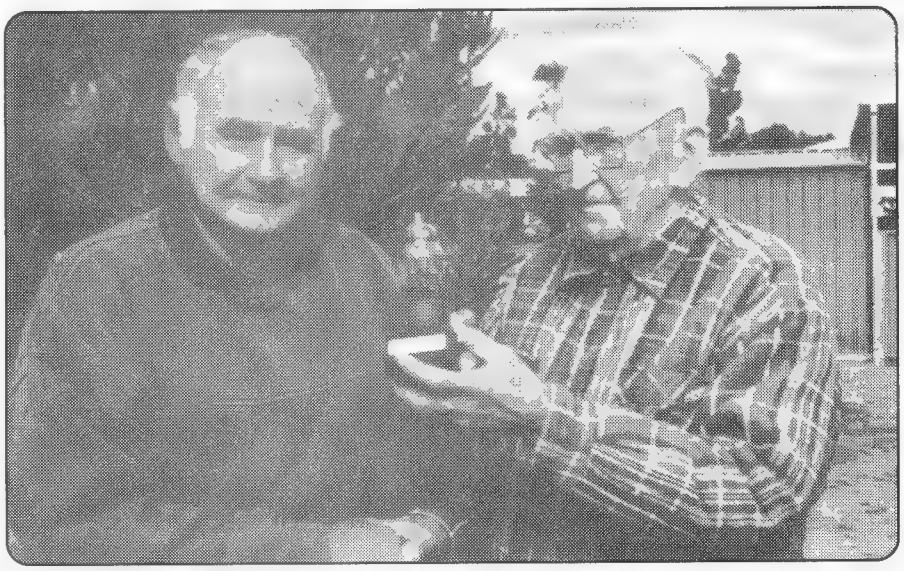
Logs should be posted to *Radio on Rails*, MDRC, PO Box 58, Highett, Vic, 3190. Logs should be received by 30 April, 2001.

Certificates: These will be awarded to the first three placegetters in each section. Other entrants will receive participation certificates.

Results: Results will be announced in the WIA's *Amateur Radio* magazine and on APC News.

Peter Parker VK3YE
Publicity Officer
Moorabbin & District Radio Club
parkerp@alphalink.com.au
(03) 9569 6751

Riverland Radio Club



Riverland Radio Club shows its appreciation to Frank Brandon (formerly VK5FB)

The Secretary of the Riverland Radio Club Doug Tamblyn VK5GA is seen here presenting Frank Brandon of Waikerie (formerly VK5FB) with a 807 valve mounted on a block which has been suitably inscribed in appreciation of his collection of Radio equipment (some collectors items and other amateur equipment) donated to raise funds for the club.

Frank still treasures to this day the valve he used in his first transceiver in 1933.

Frank Brandon first obtained his amateur licence VK5FB in 1933 and soon after a commercial licence with the Department of Civil Aviation. Frank also held a VK4 licence for a few months until the licencing Department told him he was off air due to the commencement of World War II.

Being in charge of the Radio and Communications for the Department of Civil Aviation Frank was stationed at Karumba in the Gulf of Carpentaria in 1939. His next post was in Salamaua in New Guinea in 1940. On his return of duty to Australia, Frank was posted back to Parafield just out of Adelaide which was his home base for a short period only before being posted to Rockhampton in Queensland. From Rockhampton, Frank was stationed in many places throughout Australia including Daly Waters in the NT, Cloncurry in Qld, Forest in WA, Perth, Halls Creek and then to Oodnadatta in SA. Frank retired from the Department of Civil Aviation on the 21st of August 1967

After World War II Frank was again active on Amateur Radio bands until he gave up his licence at the age of 90 in 1997 due to the fact he moved into a retirement village in Waikerie in the Riverland of SA where antennas were not permitted. Now at the age of 93 Frank still enjoys reasonable health and enjoys talking about his past experiences.

Silent Keys

The WIA regrets to announce the recent passing of:-

T O (Tom) RYMES VK1BUD
W B (Brian) WEILEY VK2AZW
E C M (Edgar) OLDS VK2BY
A C (Allan) WILLIAMS VK2FH
H D HOWE VK2QH
A L (Les) OSBORNE VK3AAO
A (Arthur) LOCK VK3AUL

Adelaide Hills Amateur Radio Society

In February the AHARS members visited the Elizabeth Amateur Radio Club / SA UHF Group at the water tower that is their headquarters. Most VK5 amateurs have heard of the "famous" water tower but not many have visited it before. Since the loss of the Burley Griffin Building the water tower has become the place of origin of the Sunday broadcasts, the aerials for which are only a very few among the many aerials that decorate the water tower,

A few people were permitted to climb to the top (fourth) floor 100 feet up but for safety reasons the number was limited. However, everyone enjoyed a sausage sizzle and the illustrated talk given by Murray Taylor, (harmonic of Geoff VK5TY) about the technical side of lighting the opening and closing ceremonies of the Olympics and Parolympics. The numbers of lights and wattage involved were rather mind-boggling.

As well as members of AHARS and EARS there were representatives from South Coast, Barossa and Riverland clubs.

The normal meetings of the AHARS are on the third Thursday of each month in the Blackwood High School. Visiting amateurs are always welcome. Please contact the Alby VK5TAW or Geoff VK5TY.

WAZ Award Applications

Attention All DXers

Please do not send WAZ applications to K1MEM's address.

Jim has been deceased for over a year now. WAZ applications continue to arrive at his QTH nearly every week.

Please help us spread the word. We at CQ have tried very hard to make sure that the revised WAZ rules received a very wide audience since last January. The WAZ rules can be found on several national radio society web pages, in several amateur radio magazines and on CQ's own web page (in 7 languages even!).

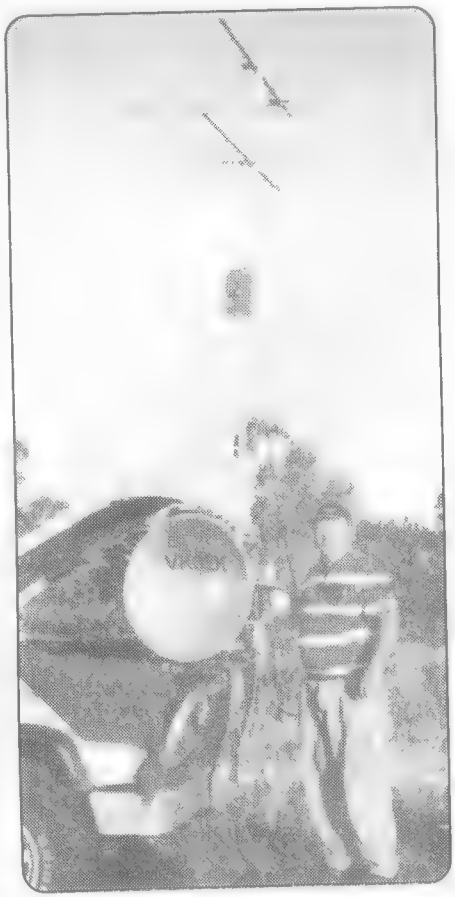
The URL for the CQ web site is www.cq-amateur-radio.com

Once again, please help get the word out to the DX Community at large. Jim's widow should not have to be bothered with having to forward WAZ applications after this long a period.

73 Paul K5RT,
CQ WAZ Awards Manager

VK3EK in VK7

Records are all about being in the right place at the right time plus a bit of research and planning. VK3EK went to Tasmania with his UHF gear and did very well. His holiday included working Russell VK3ZQB on 10GHz a distance of 524km with 1 watt and a 600mm dish and then 7 minutes later Trevor VK5NC was worked a distance of 667km. He was also able to work Trevor VK5NC on 3.5GHz with 40mW and a 600mm dish over the same path. The attached photo shows Rob VK3EK his transport and the antennae used for the above UHF contacts together with some lower frequency yagi. Rob says 'Check my web site at www.qsl.net/vk3ek/ and you will see what happens in the east'.



Gil Sones VK3AUI
30 Moore Street, Box Hill South, Vic 3128

Skeleton Sleeve Fed Monopole

This is a relative of the J pole. The J pole is a half wave end fed by a quarter wave matching section. The half wave could be end fed using a quarter wave cylindrical coaxial matching section. The cylindrical section can be replaced with a skeleton sleeve made out of rods. In CQ October 2000 Dan Richardson K6MHE describes a skeleton sleeve end fed monopole. This is shown in Fig 1.

The antenna is made out of 3/8 inch aluminium rods. The four shorter rods form a skeleton quarter wave sleeve which with the lower quarter wave of the longer rod forms a matching section between the 50 ohm coax feed and the half wave end fed element. The longer element comprising the inner of the matching section and the half wave radiator is three quarters of a wave long approximately. The skeleton sleeve fed monopole assembly is shown in Fig 2. the bottom plate drilling is shown in Fig 3. A right angle mounting bracket and SO239 adaptor and base are used which are CB antenna parts obtained from Radio Shack. Radio Shack is known locally as Tandy and the part number Cat No 21-9378 may well be the same. Alternatively there are often suitable equivalent CB radio antenna base parts and mountings available from other suppliers.

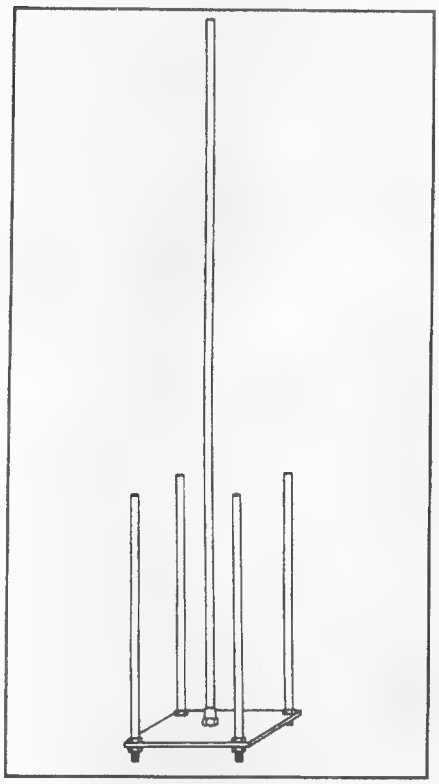


Fig 1. Skeleton Sleeve Fed Monopole.

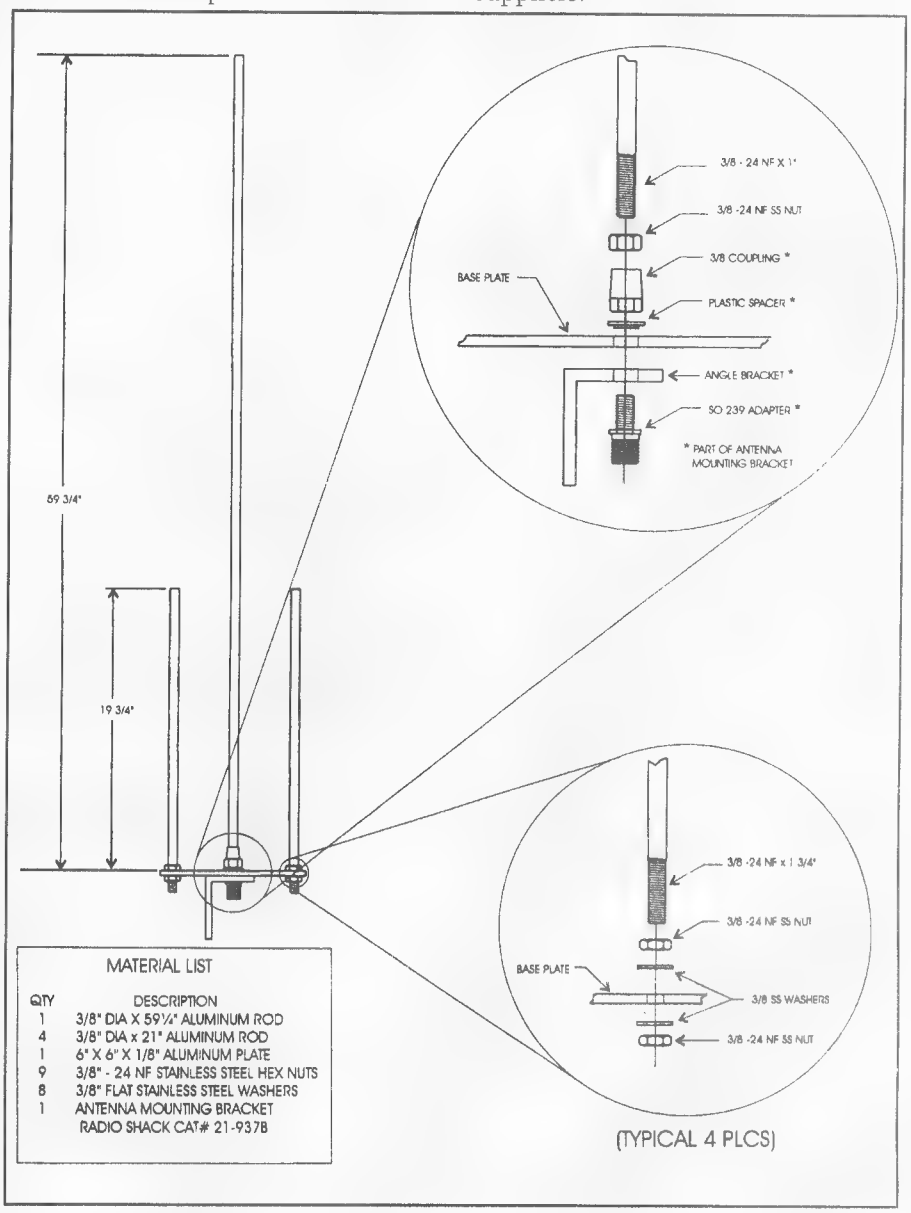


Fig 2. Assembly Drawing of Skeleton Sleeve Fed Monopole.

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AUSTRALIA'S FIRST AUTHORISED
FACTORY DIRECT IMPORTER
MASSIVE SHIPMENTS EVERY MONTH
FULL 3-YEAR WARRANTY ON
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WE SELL MOST BRANDS
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DX-1600 HF LINEARS FROM $ 3,799
HUGE RANGE OF ELECTRONICS,
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Over **22 Years** of
Professional Sales and Service.
Instant Repairs Fridays
HF Transceivers & Linears Wanted
(02) 9636 9060 or (02) 9688 4301
SHOP 8, 41 BATHURST ST, GREYSTANES,
N.S.W. 2145. FAX (02) 9688 1595

The antenna does not require a ground plane but the use of a decoupling choke near the feed point will discourage RF current on the outer of the coaxial cable feedline. This could be a ferrite choke but simply coiling up a few feet of cable into a choke would be a suitable decoupling. A quarter wave of coax coiled into a small coil should work.

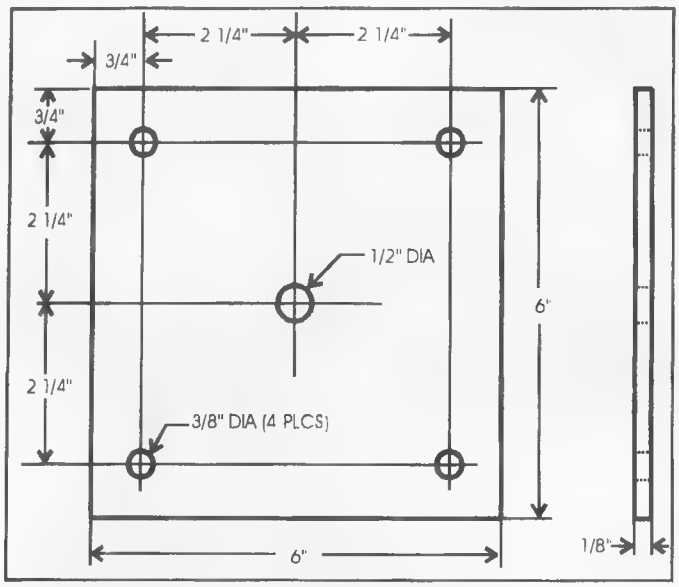


Fig 3. Base Mounting Plate Layout.

A Better PL259

The In Practice column of Ian White G3SEK in Rad Comm Juy 2000 featured a form of PL259 which has a compression clamping arrangement for the braid. These are available locally.

The conventional PL259 is shown in Fig 4. The problem is soldering the braid effectively without melting the cable or the connector insulation. This has got worse with the prevalence of connectors aimed at the cheap end of the market which use plating which can be difficult to tin. The use of soldering irons designed for small modern components is another factor. To successfully solder the braid to the connector you need to have the connector well prepared and use a soldering iron which has a bit which is sufficiently large to act as a reservoir of heat for the soldering process. A soldering iron designed for soldering large objects works well. You should also avoid connectors with insulation which melts readily.

Ian found connectors which are sold by Farnell which use a pressure sleeve cable clamp to secure the braid. This is superior to the traditional PL259. The connection of the inner to the pin is the only solder joint. The connection to the braid and the clamping is accomplished using a ferrule and a rubber compression sleeve. This is similar to the arrangement used in BNC and Type N connectors. Separate connector types are used for large and small coax.

The assembly of a pressure clamp UHF connector is shown in Fig 5. There are two types of this connector for large and small coaxial cables. The Farnell stock code is 724-816 for the UHF plug for large cable. For small cable the Farnell stock code is 724-804. The price

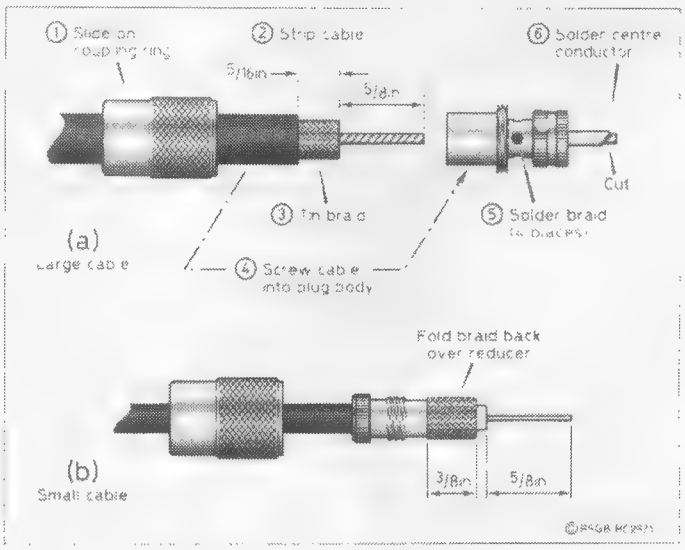


Fig 4. PL259 UHF Connector Assembly. Small cable needs a reducer.

is greater than for the old solder types but they are an improved design.

Farnell is present in Australia. Remember that you are dealing with a supplier who is used to dealing with the trade rather than retail customers. The web site for Farnell is www.farnell.com/australia/. You should be able to find the items you want and order them via the web site. The catalogue is quite large and it helps to know what you want.

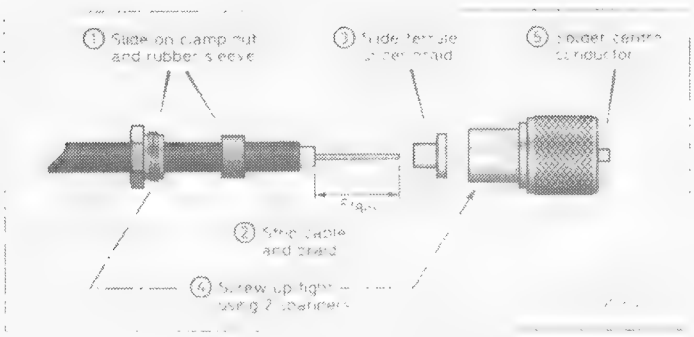


Fig 5. Improved UHF Connector with pressure sleeve cable clamp. Different type connectors are used for large and small cable.

Inrush Timer

A timer is desirable to reduce the inrush current when switching on the filaments of many valve types used in linear amplifiers. The large inrush current when they are switched on from cold can result in a shortened life. This can be avoided by limiting the current for a short time after switch on.

In JA CQ September 2000 Gordon Kiefer K6PT and Kiyoshi Endo K4ST described a simple timer to limit the inrush current in a Drake L4B which uses a 3-500Z valve. The timer contols a relay which shorts out a resistor in the AC mains supply to the amplifier after an initial time delay. The resistor value may need to be adjusted both for our mains supply and for the individual use.

The circuit is given in Fig 6.. The FET used should be available but substitution should not be difficult. The aim is to get a suitable time delay. The relay needs good isolation between the coil and the contacts if you are switching in the AC mains input circuit. The alternative would be to switch a resistor in the secondary side however the current switched would be considerable.

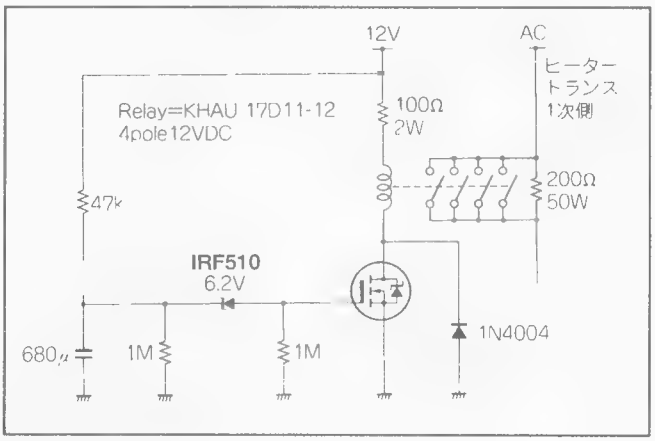


Fig 6. Inrush Timer.

nr

Advance Notice

AR Special Events

International Lighthouse/Lightship Weekend

18-19 August 2001

How about joining in?

The International coordinator for this event is Mike Dalrymple,GM4SUC, USA coordinator, Jim Weidner K2JKW, VK coordinator, Kevin VK2CE.

On-line entry form for stations operating from lighthouses/lightships, the official entrants list and last year's list can all be found at: http://www.vk2ce.com/illw or mailto: kevin@vk2ce.com

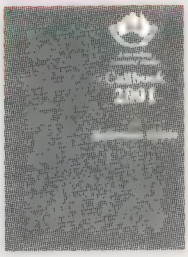
This event is not a contest, each station decides how it will operate regarding modes and bands. Participants are not committed to being on the air during the entire period - only as much as they can.

Activity does not have to take place INSIDE the lighthouse, a field-day-type set-up at the light or other building next to the light is acceptable, but permission must be obtained from the owner or any parties with vested interests in the land.

(Audio Grab courtesy RSGB)

DON'T MISS THE ACTION!

WIA Amateur Callbook 2001



Features a wide range of information about amateur radio, and includes an updated listing of call signs, names, and postal addresses of all radio operators licensed by the Australian Communications Authority.

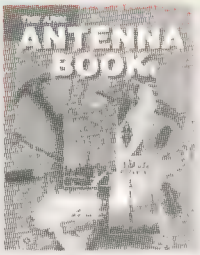
B 2345

NEW

$24.80

ARRL Antenna Handbook

19th Edition



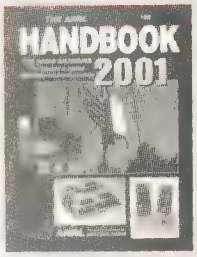
Learn how to design and build your own antenna. This book covers broadband antennas, gain and size comparisons for multi-element arrays, log periodic, quad, long-wire and travelling wave antennas. Includes a CD-ROM with two new Windows programs, detailed propagation forcasts, and more.

B 2214

NEW

$69.70

ARRL Ham Radio Handbook 2001



This is the 78th edition of the standard reference book for radio amateurs, electronics technicians and professional engineers. 1200 pages translate theory into practice through a large variety of hands-on-projects.

NEW

$69.70

SB-15 6m/2m/70cm Mobile Antenna

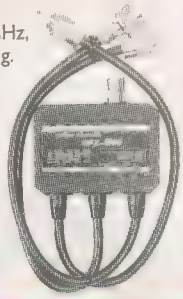
A compact tri-band mobile whip that covers the Australian 6m, 2m, and 70cm amateur bands. It has centre frequencies of 52.5MHz, 146.5MHz, and 435MHz, with good bandwidth on each band. The antenna is approximately 1.5m long, weighs just 420g and includes a fold-over adaptor built into the base section.

D 4818

$149

CFX-514N Antenna Triplexer

Allows connection of a multi-band transceiver such as the FT-847 to a common coax cable. Inputs cover 1.3 to 90MHz, 130-200MHz, and 300-500MHz, with 500W PEP power rating. Insertion loss is <0.3dB, and isolation between ports is more than 55dB. Uses an N-connector on UHF input, and PL-259 connectors on other inputs.



D 3305

$168

AS-510 6m/2m/70cm Handheld Antenna

A high-efficiency flexible antenna with fitted male SMA connector that suits 6m/2m/70cm Amateur band transceivers such as the Yaesu VX-5R. Provides improved performance compared to the antenna normally supplied with the VX-5R, particularly on the 6m band.

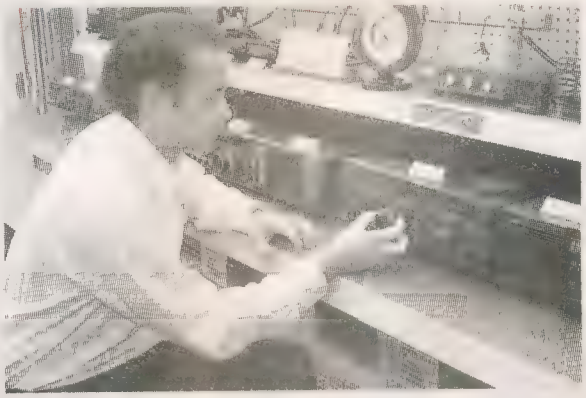
D 4339

$69.95

PowerHouse stores

A shopping experience like no other!

Dick Smith PowerHouse stores not only offer an expanded range of those original electronics products that have made our stores famous, but now you can experience the fun of using a wide range of communication equipment in our hands-on demonstration area. Called the "Ham Shack", each PowerHouse store has a dedicated area where licensed staff can show you the latest Yaesu, Uniden, or Magellan communications and GPS products, as well as an expanded range of accessory lines that may not be available in other stores. Not involved in Ham Radio? Staff can also advise on the installation of a CB radio for your four-wheel drive vehicle, how to get involved in listening to Shortwave radio stations from around the world, or assist you in the selection of a suitable accessory for an existing piece of equipment. For bushwalking or boating users, you can also find out about the latest in inexpensive satellite based navigation receivers or emergency beacons, or just browse through an extensive selection of communications related books. The PowerHouse is also the place to go if you simply need a component to finish that weekend project, to buy tools, or just to while away a few hours while checking out our in-store technical books, library CD-ROMs, or our dedicated customer use Internet terminals. With over 20,000 product lines in the electrical, computer, and communications areas, our new PowerHouse stores get the wavelength right!



To find your closest PowerHouse store, phone 1300 366 644.

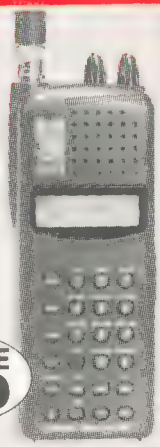
2266DPSspot col.

DON'T MISS THE ACTION!

Uniden 245XLT Trunk-Tracker™ Scanner

Now you too can follow the activity on the "trunked" radio networks used by many Government, business, and emergency services organisations. The new Uniden 245XLT Trunk-Tracker is a specially designed scanner that can read the control channel data on a number of trunked radio systems, allowing the receiver to follow specific users, or groups of users, as their transmissions automatically change frequency through a trunked network. Compatible with many Motorola and EDACS analogue trunking systems, the 245XLT is also supplied with a PC interface cable for use with third-party software. The 245XLT covers 66-88, 108-174, 406-512, and 806-956MHz and provides 300 memories in 10 banks for storing favourite frequencies, 5 pre-programmed Search-bands, Multi-Track scanning that allows you to scan a mix of conventional and trunked systems, and 10 Priority channels (one per memory bank). Super-fast Scanning and Search facilities are also provided (Scan at 100 channels per second for non-trunked services, and Search at either 100 or 300 steps per second), as well as battery-free memory back-up, Data skip to limit reception of data transmissions, an Attenuator to reduce overload from very strong signals, and a Battery Save facility to extend battery life. Each 245XLT is supplied with a NiCad battery pack, AC charger, flexible antenna, PC interface cable, and detailed instructions.

D 2735



Uniden® **$499** SAVE $30

Yaesu VR-500 Multi-mode Scanner

The new VR-500 is more than just a scanning receiver, it's more like a miniature high performance monitoring station! Providing almost continuous coverage of the 100kHz to 1300MHz range, the VR-500 includes reception of narrowband FM, wideband FM (for FM and TV broadcast audio), SSB (for Amateur, CB, and HF reception), CW, and AM (for shortwave and broadcast station) signals. A large backlit LCD screen not only displays the receiver operating frequency, but also displays channel steps and reception mode. For monitoring band activity above and below your current listening frequency, the VR-500 even provides a 60 channel Bandscope to display local activity (within a range of 6MHz max when used with 100kHz steps). A total of 1091 memory channels are provided, with 1000 of these being "regular" memories with alpha-numeric tagging, and the balance being for special features (such as Search band memories, Preset channel memories, Dual Watch memories, and a Priority memory channel). A Smart Search™ function, which sweeps a band and finds in-use channels, allows you to allocate up to 41 memories that can automatically note these active frequencies. The VR-500 operates from just 2 x "AA" size alkaline batteries, and can be connected to an external 12V DC source (such as a vehicle cigarette lighter) using the optional E-DC-5 adaptor. For easier operation, the VR-500 can also be connected to your PC using the optional ADMS-3 interface/software package.

D 2799

YAESU **$699**

Yaesu FT-90R 2m/70cm micro mobile

Another engineering breakthrough from Yaesu – a tiny-dual band mobile rig with high power output, a remoteable front panel, and a rugged receiver front-end. The FT-90R provides 50W RF output on the 2m band as well as 35W output on the 70cm band, a solid die-cast casing with microprocessor controlled cooling fan for reliable operation, and a large back-lit LCD screen, all in a package measuring just 100mm x 30mm x 138mm.

Also includes:

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Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. One councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcasts schedules and subscription rates. All enquiries should be directed to your local Division.

VK1 Division Australian Capital Territory,
GPO Box 600, Canberra ACT 2601

President	Gilbert Hughes	VK1GH
Secretary	Peter Kloppenburg	VK1CPK
Treasurer	Ernest Hosking	VK1LK

VK2 Division News South Wales
109 Wigram St, Parramatta NSW
(PO Box 1066, Parramatta 2124)
(Office hours Mon-Fri 1100-1400)
Phone 02 9689 2417
Web: *http://www.ozemail.com.au/~vk2wi*
Freecall 1800 817 644
e-mail: *vk2wi@ozemail.com.au*
Fax 02 9633 1525

President	Terry Davies	VK2KDK
Secretary	Barry White	VK2AAB
Treasurer	Pat Leeper	VK2JPA

VK3 Division Victoria
40G Victory Boulevard Ashburton VIC 3147
(Office hours Tue 10.30 -2.30)
Phone 03 9885 9261
Web: *http://www.wiavic.org.au*
Fax 03 9885 9298
e-mail: *wiavic@wiavic.org.au*

President	Jim Linton	VK3PC
Secretary	John Brown	VK3JJB
Treasurer	Barry Wilton	VK3XV

VK4 Division Queensland
PO Box 199, Wavell Heights, Qld. 4012
Phone 07 3221 9377
e-mail: *office@wiaq.powerup.com.au*
Fax 07 3266 4929
Web: *http://www.wia.org.au/vk4*

President	Colin Gladstone	VK4ACG
Secretary	David Jones	VK4OF
Treasurer	Bill McDermott	VK4AZM
Office Mgr	John Stevens	VK4AFS

VK5 Division South Australia and Northern Territory
(GPO Box 1234 Adelaide SA 5001)
Phone 08 8294 2992
web:*http://www.sant.wia.org.au*

President	Jim McLachlan	VK5NB
Secretary	David Minchin	VK5KK
Treasurer	John Butler	VK5NX

VK6 Division Western Australia
PO Box 10 West Perth WA 6872
Phone 08 9351 8873
Web: *http://www.iinet.net.au/~vk6wia/*
e-mail: *vk6wia@iinet.net.au*

President	Neil Penfold	VK6NE
Secretary	Christine Bastin	VK6ZLZ
Treasurer	Bruce Hedland-Thomas	VK6OO

VK7 Division Tasmania
PO Box 371 Hobart TAS 7001
Phone 03 6234 3553 (BH)
Web: *http://www.tased.edu.au/tasonline/vk7wia*
also through *http://www.wis.org.au/vk7*
email: *batesjw@netspace.net.au*

President	Phil Corby	VK7ZAX
Secretary	John Bates	VK7RT
Treasurer	John Bates	VK7RT

Broadcast schedules

All frequencies MHz. All times are local.

VK1WI: 3.590 LSB, 146.950 FM each Sunday evening from 8.30pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org

Annual Membership Fees. Full $77.00 Pensioner or student $63.00. Without *Amateur Radio* $49.00

From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK3BWI broadcasts on the 1st Sunday of the month at 8.00pm. Primary frequencies, 3.615 DSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK4WIA broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 10.135 MHz SSB, 14.342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB, 29.660 MHz FM (rptr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning. QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM. On Sunday evenings, at 18.45 hrs K on 3.605SSB and 147.000 FM, a repeat of the previous week's edition of QNEWS is broadcast. Broadcast news in text form on packet is available under WIAQ@VKNET. QNEWS Text and real audio files available from the web site

Annual Membership Fees. Full $85.00 Pensioner or student $72.00. Without *Amateur Radio* $56.00

VK5WI: 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.

Annual Membership Fees. Full $82.00 Pensioner or student $68.00. Without *Amateur Radio* $54.00

VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website

Annual Membership Fees. Full $69.00 Pensioner or student $59.00. Without *Amateur Radio* $38.00

VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.

Annual Membership Fees. Full $88.00 Pensioner or student $75.00. Without *Amateur Radio* $55.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).

VK4 Notes - Qnews

By Alistair Elrick VK4MV

The visit by the Gladstone Club to Tannum Sands early in November was such a "hit" with the members, that the club has decided to make it a regular event on the VK4 Amateur scene. The first weekend in November will henceforth be known as "The Tannum Sands Ham Get-together". So watch out for this new event if you are living in this area or visiting around that time of the year.

So while speaking of events in the North. We have advance warning of the regular events from further north, by the Townsville Club the TARC Inc. The very popular Far North Queensland Amateur Radio Get-Together or FNNQARGG! (Funny name - must be something in the water up there!) This will be held from Friday PM June 9th to Monday AM June 11th 2001 inclusive. All this to be conducted at the Beachcomber Coconut Village, South Mission Beach.

Also the Bi-annual "biggie", which is the North Queensland Amateur Radio Convention. This will be, as was the 1999 event, at the University Hall, James Cook University, plus other venues in Townsville. The date is the weekend of September 21st to 23rd, 2001. From the Friday night welcome with nibbles and drinks to the 'formal' dinner and talent search on Saturday night, then the monster auction on Sunday, this is one not to be missed. An all-inclusive registration for the weekend will cover entry to the event for the weekend with several meals provided. More details to follow closer to the event date.

The report from the WIAQ General Meeting that was held in Rockhampton has been extremely positive. Some 30 attendees were able to witness the workings of their Divisional Council first hand and take direct part in the proceedings. A very sociable weekend brought the faces of the Council to the members and visitors. Many thanks go to the Rockhampton Rugby Leagues Club for the facilities and the dining venue, plus the RADARS Club and Clive Sait VK4ACC for the hospitality and organisation of the weekend.

The final part of the Business Meeting at Rockhampton was an address on LIPD's and their impact on the Amateur Radio Service. This address was delivered by Jack Chomley, VK4JRC, who had just returned from the world LIPD conference at Birmingham in England. Jack is a serious participant in the industry, with international and national contracts throughout the Asia Pacific region. He certainly knows his subject and commented that the general thrust of the WIA's focus as it is now being developed is in fact the correct course. That is, to learn to live with them, because commercial forces will not want a band that is full of class licensed LIPD's. There is more to come on this subject, and a few Amateurs including IARU Liaison Officer Grant VK5ZWI, Nev VK4TX and Ken VK4KWM are currently developing a proposal for the Federal WIA in concert with the Federal TAC chairman, John Martin. Jack went on to demonstrate several LIPD's in a room full of amateurs many of whom had 70-cm handhelds with them. No one suffered any interference, and while there will no doubt be complications, the ACA has offered to facilitate a reworking of our band plan to accommodate these changes.

VK1 Notes

Forward Bias

Peter Kloppenburg VK1CPK

One of our inveterate DXers, Michael Jenkins (VK1MJ), was the guest speaker at the General Meeting of the WIA-ACT Division on January 22, 2001. The theme of Mike's speech was Phase-Shift-Keying 31 (PSK 31). This new mode of communication on the HF bands is making a similar impact as Single Side Band (SSB) did in the early fifties. Mike said that: crowded bands in the USA and Europe called for narrow bandwidth signals of which several could fit within a three kHz slot. He added that almost all radio amateurs had the use of a computer in the hamshack which could easily be hooked up to the transceiver, and, when loaded with communications software, allowed keyboard type communications with other equally equipped rigs. Mike used block diagrams on a white-board to explain the signal flow to and from the setup. As it is only recently that computers can be fitted with a soundcard, an opportunity presented itself to communications designers to use digitisation and processing power to modulate and demodulate RF signals passing through the transceiver of an extremely narrow bandwidth. This bandwidth is 31 hertz. Some of the PSK 31 details he quoted were surprising and impressive. He said that PSK 31 started in about 1999, has a 100% duty mode, uses Upper Side Band (USB), and a maximum RF output power of 40 watts. Use is made of the Simplex mode that benefits from a very high Signal-to-Noise ratio. However, the mode is affected by Doppler shifts due to magnetic disturbances, and multipath propagation on long paths. Old-fashioned transceivers can be used for PSK 31, as no ALC is used, no compression, and no DSP. Frequencies in use are: 3.580, 7.035 or 7.070, 14.070, 21.070, 24.970, 28.120 MHz. One of the attractive features of PSK 31 is the spectrum analyser type display on the

computer screen. This shows a Niagara Falls type of waterfall in colour, with frequency on the X-axis and time on the Y-axis. Because of the narrow bandwidth occupied by individual signals, several vertical lines representing them can be seen at once on a three kHz-wide display. Although Mike did not demonstrate a life performance of this new mode, he quoted several sources of information regarding setups, such as how to connect everything, where to get the software, what frequencies are in use, and other modes which are similar to PSK31 but use different software and protocols. Mike referred to issues of Amateur Radio (AR) in which the new mode is described in more detail. These are: QEX July/August 1999 page 3, AR March 2000, page 36, and May issues of 2000, and January 2001. A Website is also available at: www.buckcommco.com for how to make connections to your favourite transceiver.

On a different note: For those of us who had their Certificates of Proficiency issued before 1 September 2000, and, want to apply for a local callsign in a foreign CEPT country, your AOCP or Novice Certificate must now be endorsed with HAREC to enable you to apply for a callsign in a foreign country. Submit your Certificate, a passport photo in colour, plus $32 to your local ACA area office. Once endorsed, your certificate is recognised by the authorities in the CEPT country of your choice, and a callsign is issued as per local custom. HAREC (Harmonised Amateur Radio Examination Certificate). For more details go to: http://www.aca.gov.au/publications/info/aocp.htm

Flash-Flash: Our Federal Councillor (FC), Glenn Dunstan, has resigned from his position. Glenn and his family are moving to Cairns, Queensland for work related activities. Our new FC is Gilbert Hughes (VK1GH), who accepted the nomination on 12 February, 2001.

The next General Meeting will be held on 26 March 2001, in Room 1, Griffin Centre, Civic, Canberra City, at 8.00 pm.

VK2 Notes

By Pat Leeper VK2JPA

Firstly, a reminder about the Annual General Meeting to be held on Saturday 21 April 2001, at Amateur Radio House 109 Wigram Street Parramatta, commencing at 11.00 am.

This is your chance to have a say in the running of this Division. New blood is needed on the Council to pursue aims to the betterment of Amateur radio - to protect our frequencies, and draw younger people to the hobby. The old guard is fading fast, it's time for the new generation to take a hand.

Remember to make your ballot count, by reading the instructions carefully and marking your choices for nine councillors.

John Turner VK2WRT was elected to take over the vacant place on Council that occurred when Michael Corbin VK2YC resigned. A big welcome to John who is a willing worker, already taking part in the running of the divisional office.

By the time you read this, the AX2GAMES QSL cards will have been processed and mailed. They were received at the office early in February and handed over to our Special Projects Officer Stephen Pall VK2PS. It is a folded card with lots of information about Sydney, etc.

VK2 has a new webmaster in Geoff McGrorey-Clark VK2EO. Richard Murnane VK2SKY, who set up the web page some years back has resigned and has our thanks for the great job he did for the Council.

That's it for this month - see you next time.

VK7 Notes

"QRM"

As is the case around Australia February is the month for the infamous Annual Meetings and as at the 10th day when this report should be in two of our W.I.A. branches the Southern and Northwestern, have had theirs.

In the South, for the ensuing year we have as the main officers: -

President – Scott, VK7HSE
Secretary — Dale, VK7DG
Treasurer — Richard VK7RO
Broadcast Officer – Mike, VK7FB.

In the Northwest these places are filled by: -

President – Bob , VK7MGW
Secretary – Ron, VK7RN
Treasurer — Terry, VK7ZTI
And as Education Officer – Tony, VK7AX

This year, in the Northwest, we hope to have a lot of work for our education officer - we are making a big push into every Rotary, Lions, Soroptomist, Seniors and any other club to interest people to join classes and come into our hobby as the ideal hobby for the older person, bearing in mind this could bring in a lot of people with executive experience. Wish us success – we'll be really trying.

"Rally Tasmania 2001" – it's 21st year, was on the 17th – 18th. February in the Northwest and 21 operators from all three branches joined to do the communications. all very ably organized by Phil, VK7PU. Due to the mountainous terrain three remote split frequency repeaters were used from high level sites and covered the area well. Tasmania is not an easy place to work this sort of communications. The organizers are lavish in their praise for the efficiency of our W.I.A. This year official CAMS observers from the island up north were present.

Cheers for now Ron, VK7RN

Contest Calendar March – May 2001

Mar	—	ARRL DX Contest	(SSB)	
Mar	10/11	RSGB Commonwealth Contest	(CW)	
Mar	10/11	World-Wide Locator Contest	(CW/SSB)	
Mar	17/18	John Moyle Field Day Contest	(All modes)	(Feb 01)
Mar	17/18	Russian DX Contest	(CW/SSB)	
Mar	17/18	Bermuda WW Contest	(CW/SSB)	
Mar	17/18	DARC HF SSTV Contest		
Mar	24/25	CQ WW WPX Contest	(SSB)	
Apr	7/8	SP DX Contest	(CW/SSB)	
Apr	7/8	EA RTTY Contest		
Apr	7/8	King of Spain Contest	(CW/SSB)	
Apr	13-15	Japan Int. DX Contest 20-10 m	(CW)	(Mar 01)
Apr	14	Holyland DX Contest	(CW/SSB)	(Mar 01)
Apr	21/22	YU DX Contest	(CW/SSB)	
Apr	25	Harry Angel Sprint	(CW/SSB)	
Apr	28/29	SP DX RTTY Contest		(Mar 01)
Apr	28/29	Helvetia DX Contest	(CW/SSB)	(Mar 01)
May	5	VK/Trans-Tasman 80m Contest	(CW/SSB)	
May	5/6	Ten-Ten Intl. Spring QSO Party	(CW/RTTY)	
May	5/6	ARI Intl. DX Contest	(CW/SSB/RTTY)	
May	12/13	VOLTA WW RTTY Contest		
May	12/13	CQ-M Intl. DX Contest	(CW/SSB/SSTV)	
May	26/27	Anatolian RTTY WW Contest		
May	26/27	CQ WW WPX Contest	(CW)	

The following has been received from Bruce Renn VK3JWZ Please make this new event widely known and support it with your participation.

A new 80m Contest:

The inaugural "VK/trans-Tasman Contest" will be run on 80 metres, on the 1st SAT in May.

The inspiration for this Contest came from the NZ Memorial Contest, which is held in July, on 80m. It runs for 6 hours, in 1 hour stages, and has a points system based on call-areas worked. It is long enough to be interesting, without being arduous, and provides constant activity with stations being reworked each hour.

The intention with the VK/trans-Tasman Contest is to have a similar 6 hour duration that will not impinge too much on family life or sleeping time. The main emphasis will be on contacts made between VK and ZL stations, with the scoring structured to give all stations an equal chance, regardless of their geographical location.

Bonus points can also be earned each hour, and they are awarded so as to encourage trans-Tasman contacts and participation by VK5s/8s and VK6s.

Phone and CW Categories will be catered for, as well as separate Categories to encourage QRP and Mobile operators.

An engraved trophy will be awarded to the outright winner, with certificates for winners and placegetters in the other Categories.

This Contest is not a sprint or a marathon. It will provide 6 hours of non-stop evening entertainment, in which no station should be advantaged by location or equipment.

So, make a note of the details, and give it a go!

The only thing we ask is that you take the time to submit your log (even if you don't think you will win). This is essential to make it all worthwhile, and to ensure the on-going success of the Contest.

Rules will be published in the WIA and NZART magazines, and are available on the Contest website, <http://home.iprimus.com.au/vktasman >.- that is: http://home.iprimus.com.au/vktasman

Queries and comment can be emailed to the Contest Manager on: vktasman@hotmail.com .

Japan International DX Contest 2001

LF CW: 2200z 12 Jan - 2200z 14 Jan 2001

HF CW: 2300z 13 Apr - 2300z 15 Apr 2001

PHONE: 2300z 9 Nov - 2300z 11 Nov 2001

Object is to work as many JA stations + JD1 islands as possible.

Bands: LF CW 160/80/40; HF CW 20/15/10; Phone 80 - 10 (no WARC).

Categories: Single operator single/multi-band high power (more than 100W o/p); single operator single/multi-band low power (less than 100W o/p); multi-operator; maritime mobile.

General: Operate for maximum of 30 hours only and show rest periods in log; single op must perform all tasks himself; multi-op must remain on band for at least 10 minutes and during this time multi-op may transmit on another band only if new station is multiplier; ops may use spotting networks.

Exchange: RST plus CQ Zone number. JAs will send RST plus Prefecture number (01 - 50).

Score on 160m four points; 80m two points; 40/20/15m one point; 10m two points.

Multiplier is total JA prefectures + JD1 islands worked (possible 50 per band).

Final Score: multiply total points by total multipliers.

Logs (one per callsign) must show times in UTC; exchanges; multiplier first time worked; duplicate QSOs shown as no points; rest periods clearly marked; use separate sheet for each band.

Send Logs and summary sheet to: JIDX Contest, c/o Five-Nine Magazine, PO Box 59, Kamata, Tokyo 144, Japan, by 28 Feb, 31 May or 31 Dec. Logs may be submitted on 3.5 inch disk in ASCII with summary sheet, or by e-mail. For instructions send e-mail to <jidx-info@ne.nal.go.jp> with command #get jidxlog.eng or #get jidxlog.jpn

Holyland DX Contest

1800z Sat - 1800z Sun, 14/15 April

Object is to work as many Israeli stations as possible.

Bands: 160 - 10 m (no WARC). **Categories:** single and multi-operator multi-bands; SWL.

Send RS(T) plus serial number. Israeli stations will send RS(T) plus area code. The same stations may be contacted on both CW and SSB on each band.

Score two points per QSO on 160/80/40 and one point on 20/15/10.

Final score is total points X total areas, with areas counted separately for each band. SWLs should report Israeli stations only, and include time, callsign, station worked, RS(T) plus area code and points.

Send summary sheet and separate logs for each band, postmarked by 27 May 2001 to: Contest Manager, Israel Amateur Radio Club, Box 17600, Tel Aviv, Israel 61176.

Helvetia DX Contest

1300z Sat - 1300z Sun, 28/29 April

Work only Swiss stations, CW on 160 - 10 m and SSB on 80 - 10 m (no WARC). Each station may be worked only once per band regardless of mode.

Score three points per QSO.

Multiplier is total number of Swiss cantons worked (max 26 per band).

Send log to be received by 15 June to: Niklaus Zinsstag HB9DDZ, Salmendorfli 568, CH-4338 Rheinsulz, Switzerland.

Cantons are: AG AI AR BE BL BS FR GE GL GR JU LU NE NW OW SG SH SO SZ TG TI UR VD VS ZG ZH.

SP DX RTTY Contest

1200z Sat - 1200z Sun, 28/29 April

Categories: single operator all bands; multi-operator all bands; SWL.

Use Baudot mode on **bands** 80 - 10 m (no WARC).

Call CQ SP RVG TEST.

Exchange RST plus serial number.

Score two points per QSO with own country, five points with other countries in same continent and ten points with other continents.

Multipliers are the sum of DXCC countries and Polish provinces (max 49).

Send logs postmarked by 23 May to: SPDX RTTY Contest Manager, Box 253, 81-963 Gdynia 1, Poland.

ar

How You Can Make The WIA Work For *You*

Much has been said of our loss of a considerably portion of our bands and how the WIA should be doing this or that.

It is all very well to lobby the President (I assume of the WIA federal) and also the ACA liaison committee. The fact of the matter is that these people already know that any loss of amateur frequencies is unwelcome. Their ability to be able to do something about it rests on a number of things. By far the most powerful argument that people representing amateurs gan give to government is the fact that they represent "X" number of amateurs.

At the moment about 25% of amateurs are WIA members.

If the ACA liaison or the WIA President could demonstrate the support of 75% of amateurs then their power is treble.

There is no talent that can substitute for the numbers. The "push" you need comes from the number of amateurs represented.

Joining your local WIA division is the best push you can give.

(VK4 Federal Councillor (Alt.) VK4EHT Bruce).

NEXT ISSUE

How much do you know about the WIA?

Test yourself with the WIA QUIZ next month. You may be surprised!

ACARS

Aircraft Communications And Reporting System

Steve Blanche, VK2KFJ,
vk2kfj@qsl.net

This is a system for reporting information from aircraft, both when on the ground and whilst flying, I heard about this system from amateurs using it for VHF propagation studies and general SWL activities.

In Australia and New Zealand this is done on 131.550 MHz, and with the right decoder software, you can monitor this frequency with just a simple scanning receiver and track aircraft movements, using your personal computer, to display the information decoded. ACARS has been discussed in magazines before, so I will not go into details, but thought for those with access to the internet, that they can easily download some ACARS decoder software from the web and try it themselves. Some sites recently found are listed below:

This site just shows real time ACARS messages being received on 131.450 MHz over Thailand, a good example of what the decoded messages look like.
http://sky.air.com.hk/acars/

This site has decoding software for ACARS (and other digital modes) that runs on a Apple Macintosh computer.
http://www.blackcatsystems.com/software/multimode.html

This web page lists some information about the use and frequencies for HF ACARS.
http://www.blackcatsystems.com/radio/hfACARS.html

This site is provided by Bob Bruninga, WB4APR, who is also known for his APRS activities. This page shows a real time map over the USA, listing aircraft and their positions, based on APRS and ACARS information.
http://web.usna.navy.mil/~bruninga/acar.html

This site provides some software for decoding ACARS, the software runs on a DOS or Windows based PC, using a sound card, called the Kracars Freeware ACARS decoder, presently version 1.2, the downloadable file is krcrs12.zip and it is approximately 33 kbytes.
http://www.tardis.ed.ac.uk/~kr/kracars/index.html

This is another ACARS decoder software, for a Windows based PC, using a sound card, presently version 0.7, the downloadable file is wacars07.zip and is approximately 359 kbytes. Now this software can go as far as providing real time maps of aircraft movements, unfortunately, the mapping information really only covers UK and Europe, however, I expect as more people become involved in this form of SWL activity, that people will create the mapping information for this part of the world.
http://www.geocities.com/CapeCanaveral/Cockpit/9870/wacars/intro.html

This site is another good source of practical information and links to download sites
http://members.tripod.co.uk/blackcat001/acars.html

Another site for learning about ACARS is on the ACARS-Link web site, which has FAQ's and email contact addresses to ask questions, links to other ACARS sites, a good place for the beginner. It has regular news reports of the latest in ACARS activities.
http://patriot.net/~acars/index.htm

The AirNav web site, these people provide a commercial software package and are heavily involved with all aspects of ACARS and aircraft monitoring, reading around, I think these people, or some of them are amateur radio operators, who have probably started this as a hobby and went commercial with it. Again this site appears to be UK based and oriented at UK and Europe, but worth browsing the site and if you are really keen at monitoring ACARS, I would expect you would probably buy a copy of this software. In fact these packages also allow to extract data from over the internet, so you can track aircraft worldwide, without a scanning receiver.
http://www.airnavsystems.com/

As for me, I have not used any of these ACARS decoders yet, so I can not comment on how to install or use them, I have so far only gone looking for this decoder software for a friend who enjoys monitoring aircraft. I thought this might be useful information for some of you, as I was quite impressed with what I found.

73's and have fun., Steve Blanche, VK2KFJ, vk2kfj@qsl.net

The WIA
...In Tune
with Amateur Radio

Beyond Our Shores

David Pilley VK2AYD
Davpil@midcoast.com.au

My second attempt! I hope members found last month's of interest. Please feel free to e-mail me if you have any information concerning an overseas Society or Amateur Radio Club that would interest our members. The following is a review of some of the happenings during the month of February that were obtained from other Society journals.

Free Licences

The Radiocommunications Agency in the U.K. says that Amateur Radio Licence applications received on or after 1 April will be issued *free of charge* to any person aged 75 or over at the time of issue, or renewal. (ACA please note)

RSGB New Direction

The RSGB is undergoing new development formation with the creation of new Regional Managers throughout the U.K. Twelve managers have been appointed to provide members with local access to their Committee and to promote the RSGB in their local area through visiting clubs.

Earthquake in India

When the big earthquake struck the State of Gujarat in western India in January, amateurs from ARSI and from the National Institute of Amateur Radio were quickly on the scene providing communication support and information on victims, etc. VU2DVO reported amateurs were working round the clock as the telephone service was down. Traffic was handled on both 40 and 20 metres as well as VHF. (We had a similar disaster here in north N.S.W. where the floods caused havoc and power was out. Local amateurs came to the rescue).

Promotional Movie

NZART advise an Amateur Radio promotional movie has been developed by Fred Johnson, ZL2AMJ. Details can be found on their Internet web site. http://www.nzart.org.nz/nzart/promo/promoting/promoting.html

Field Days

The NZART held their Field Day in February. We held ours in March. Wouldn't it be great if they could all be co-ordinated around the world for 2 days of the year? One Field Day for the Northern Hemisphere during their summer and one for the south during our summer.

Morse Test Speed Reduced

And you thought we were the last country to reduce our speed to 5 wpm! Germany claim to be the last to lower their Morse code test speed for a HF licence coming into effect from 22 December 2000.

Birthdays

Both New Zealand NZART and the Austrian radio society, OEVSV will be celebrating their 75th anniversary this year. Austrian amateurs have been given special permission to use the special prefix OE75 during the year 2001.

QTI

QTI, the audiocassette magazine for blind radio enthusiasts, is back in production in the U.K. QTI stands for "Quotations of Technical Interest". The cassettes include readings from a wide range of scientific, technological, engineering, computer and radio publications. Information can be obtained from Alan Lovegreen, GM4FLX, 16 Grahams Ave., Lochwinnoch PA12 4EG, Scotland or by email alangm4flx@aol.com

CQ Hall of Fame

CQ has announced the establishment of the "CQ Amateur Radio Hall of Fame." The new hall of honour joins the "DX Hall of Fame" and "CQ Contest Hall of Fame." CQ say the dual goals of the new programme are to recognise individuals who have made significant contributions and to focus public attention on the far-reaching and long standing value of Amateur Radio to society.

Big Brother Project

The President of the ARRL, Jim Haynie, W5JBP, had advised that his project, which will be known at "The ARRL Amateur Radio Education Project" is now off the ground. Jim says "The goal is to improve the quality of education for kids by providing educationally valid techniques involving Amateur Radio for teaching all sorts of subjects – science, geography, languages, speech, etc.". This project is aimed at providing a turnkey Amateur Radio curriculum at the middle school level plus resources and equipment to bring it to life for youngsters. It was also reported in "QST" that "FAR" (Foundation for Amateur Radio Inc.), a non- profit organisation, plan to administer 67 scholarships for the year 2001-2002. The awards range from $US500 to $US2500. What do we do in Australia?

Non Society Members

David Sumner, K1TZ, who is the Executive Vice President and Secretary of the ARRL, writes some extremely sound editorials each month in "QST". In the February issue of "QST" he made an interesting comment about Amateurs who were not members of the Society and I quote. "Alas, writing QST editorials is a bit like preaching to the choir; the ones most in need of the message aren't there to hear it. ARRL members shoulder the entire burden of representing Amateur Radio in the United States, but share their operating privileges with all licencees, members or not". This could of course be our very own Society. Membership of our Society is so important to the future of Amateur Radio.

Comoros

Over the past few months both the RSGB and ARRL have been giving a lot of publicity to the big DXpedition that operated from the Cosmos Islands with the call sign D68C. Where is Comoros? It's a group of islands located in the North Mozambique Channel between Mozambique and Madagascar. A multinational group of Amateurs from

Europe, North and South America, Russia and Japan came together to make this expedition possible. Over 3.5 tones of equipment that included 10 transceivers, 9 amplifiers, 4 km of co-ax, 9 beams and 11 laptops were shipped in a container. Hopefully you were able to enjoy a short "59" or "599" QSO with D68C. QSL to G3SWH via the RSGB QSL Bureau.

A Trip Around the World

76 year old David Clark, KB6ATM, made an attempt to be the oldest person to sail solo around the world. Unfortunately vessel, the 44ft "Mollie Milar" sank two days out of Cape Town, South Africa. He started the attempt in late 1999 and kept in touch with his family via ham radio. When David became aware he was in trouble he used his ham radio to call for help. This was picked up in Cape Town and relayed to maritime rescue authorities. David was rescued by a container ship that was in the area where he sank. It is understood he is returning to Cape Town to continue his objective. We wish him well.

Awards

John Kelleher VK3DP, Federal Awards Officer
4 Brock Crescent, Box Hill South Vic 3128, (03) 9889 8393

There is gathering speculation as to the continued viability of QSLs and measures in obtaining them. The most used methods are via the QSL bureaus, the QSL managers, or direct to the operator of the station worked. These have come under attack from a number of organizations, chiefly in regard to the postal rates for the legal exchange of QSL cards.

Looking through the Web information, (sent to me by David VK3EW), I find a growing number of organizations clearly stating that 'one green stamp' is not enough to exchange for return airmail. Because of this, we become subject to a long wait through the bureaus or by surface mail. This is also reflected in the processing of awards, where postal rates have literally 'gone through the roof'.

The ARL have introduced a " 17 metre single band award" which began on Jan 2 2001. Further information can be obtained at dxcc@arl.org

RUSSIA : The CIS Award.

The Radio Amateur's Diploma of the Commonwealth of Independont States is sponsored by the "Funkner DX Family" Amateur Radio Club (RZ3DZZ), and is available to all licensed amateurs and SWLs for contacting/hearing 12 stations located in the 12 CIS countries. QSL cards NOT required.

The 12 CIS countries are : 4K – Azerbaijan, 4L – Georgia, EK – Armenia, ER – Moldova, EU – Belarus, EX – Kirghizstan, EY – Tajikistan, EZ – Turkmenistan, UK – Uzbekistan, UN – Kazakhistan, UR – Ukraine, and R – Russia.

No dates or fees were mentioned as of this date. The address for the Funkner DX Family is : PO Box 50, Moscow 109439, Russia.

The long-awaited information on VK0MM has arived. QSL is now via Alan VK4AAR

Check with Alan on vk0mm@yahoo.com if there is any doubt as to your entry in the log.

In a recent survey, the DXCC "Top Ten" were :-

1. P5
2. VU4
3. BS7
4. 3Y – Bouvet
5. VU7
6. KH5K
7. YA
8. VP8 _ S.Sand
9. 3Y – P1
10. 7O

Pratas Island (BQ9P) will be active again between 6 aand 15 March, on CW & SSB. QSL via either BV4YB, BV4FH or JI6KVR.

Easter Island (3G0Y) can be contacted between 4 and 19 March.

Kaliningrad : In a short note, Victor , UA2FM, says that some obscure persons in the mail service absolutely love "green stamps", and may possibly destroy your letters and card requests in the process. Also, addresses of amateur stations must contain the name of the operator, so requests for cards for Victor UA2FM must go to :-

Victor Loginov at PO Box 73, Kaliningrad 236000 Russia.

Requests for RK2FWA and RW2F go via DK4VW.

New Zealand : The IARU Region 3 Award.

Contact stations in member countries after 5 Apr 82. The basic award requires 7 countries and Silver Star and Gold Star endorsements are available for 15 and 20 respectively.

Eligible countries list : Australia, Brunei, Bangladesh, China (PRC) Fiji, French Polynesia (only FO8 stations) Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Isls, Sri Lanka, Thailand, Tonga, and Vanuatu. Plus 1 credit from US Teritories in the Pacific, from Guam, Northern Marianas, American Samoa, Wake Island, Baker Howland Group, as represented by ARL.

1 country credit from Pitcairn Island, or Chagos, represented by RSGB.

General requirements: GCR list accepted under usual conditions. Fees for DX applicants is US$2.00 . For overseas airmail add US$1.00. Send all applications to

NZART Awards Manager, ZL3GX
P.O. Box 1733
Christchurch 8015
New Zealand.

Yugoslavia : Worked All Yugoslavia Award.

Contact all call areas in the Federal Republic of Yugoslavia since 9 May 1992. These are – YU1, YU6, YU7, YU8, YU9 and YU0. Other prefixes allocated are YT, YZ,

4N and 4O. DX applicants need 3 – YU1, 3 – YU7, 1 – YU6, and 1 – YU8. SRJ Headquarters station YU0, may substitute for any one missing contact. All bands and modes. GCR list and fee of 10 Irc's to :-

Savez Radio-Amatera Jugoslavia
Awards Manager, YU1KO
P.O. Box 48
YU-11001 Beograd, Yugoslavia.

Best Regards es 73 de John, VK3DP.

AMSAT

Bill Magnusson VK3JT

AO-40 Recovery Update

To quote from the AMSAT-DL web site:

"AO-40 is curently like a ship on a sandbank at low-tide and in the fog. In the fog because of the high solar-angle (maximum of 77 degrees) where the onboard sun sensor(s) temporarily cannot see. At low-tide because the increasing solar-angle leads to less illumination (minimum of 23 percent), thus less energy is produced. AO-40 is stuck on a sandbank because the satellite cannot be maneuvered out of this situation very easily. The 'de-spinning' software routine may help. This program should work without sun sensor data and will use on-going measurements from the solar panels as an attitude indicator. Intensive work on this software is taking place. Even if this routine doesn't work immediately, there is no reason to panic. The 'fog and low-tide' orbit will disappear with further seasonal Sun movements around the spacecraft. By April the sensors will see the Sun again and active attitude control can be restarted. After lowering the curent spin rate, improving the Sun angle and repositioning AO-40's antennas, all further tests can be done. Command stations G3RUH and W4SM have completed a long-term prediction of AO-40's new orbit. Even after last year's accident and the resulting decrease of perigee, AO-40's orbit will be fairly stable through this period. The attitude of AO-40 is curently listed as ALON 248 and ALAT –7". AO-40 is transmitting telemetry data on "S" band but the attitude is such that signals are only strong during the period immediately after perigee, between MA – 0 and MA – 20. Spin modulation has made it difficult to capture the telemetry.

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000utc with early check-ins at 0945utc. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900utc with early check-ins at 0845utc. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
GPO Box 2141, Adelaide, SA. 5001.
Graham's email address is:
vk5agr@amsat.org

ISS Operations.

Many operators will have been disappointed by the lack of amateur radio activity from the International Space Station since the first crew arived. There has been much speculation. Here is a recent summing-up of the situation regarding amateur radio operations on the International Space Station. It was compiled by Frank Bauer KA3HDO, Chairman of ARISS. I have left out one or two small items of concern to USA amateurs only.

Frank begins, "I have had several inquiries as to "what's up" with Amateur Radio operations on the ISS. I hope to provide you as much information as we have at this point in time. Miles Mann recently defined some of the mechanics of communicating with ISS. This represented a good run down for each of you to prepare for amateur radio operations. The following, while long, will give each of you a good understanding of where we are and where we are going with ARISS ops. I would suggest that you save this information for the future".

"Before I get into what is happening today on ISS, I would like to cycle back a few years ago. In 1996 an international group of radio amateurs got together with a common vision—to develop a single amateur radio station on ISS. In September 2000, this international team, called Amateur Radio on the International Space Station (or ARISS), realised this dream with the launch of the first complement of amateur radio hardware on ISS. I want everyone to know that this event represented the culmination of a very formidable task. If you could have seen, day to day, how difficult it was to develop and qualify hardware for ISS (remember there were no precedents before us) you would understand that this international team did something that was near impossible. Actually we blazed a trail for NASA, Energia and all the other ISS countries by being the FIRST to get our "payload" hardware qualified. During this formidable process, some areas associated with ARISS were not completed as rigorously as others. In particular, the on-board procedures for the hardware need to be improved and the U.S. team would like to better educate the U.S. crew on operations in the context of the three primary goals of ARISS ops, School Group Contacts, General QSOs and Family Contacts. Let's walk through some of the operational concerns the ARISS team have received from you:

General QSO Operations

One thing we all need to keep in mind—the crew members really define whether they want to use the equipment or not. Depending on their interest and the crew workload, various facets of the hobby will be engaged or not. My past work in SAREX made me acutely aware.

Voice Operations

There are some things we do know regarding general voice QSOs. Those that have been involved in Amateur Radio on Human Spaceflight vehicles know that Sergei, U5MIR enjoys amateur radio operation. He was extremely active on Mir and was the same on Shuttle Missions that caried amateur radio. Many of you have noticed the absence of Sergei. It is our belief that he is quite busy with the 143.625 communications. Based on what we have learned from operations over the past 2 months, the ARISS team would be surprised if this first crew will do a substantial number of general voice QSO's. Shep did not get instruction on general QSO operations from the US team and discussions with him have recently led us to believe that he wants to concentrate on School Group contacts and autonomous packet radio operations.

Packet Operations

I made an announcement a couple of weeks ago that the packet system was going to be turned on. Well, it was turned on and I am sure each of you along with my team listened intently for the packet beacon to no avail. Over the past few weeks we have been working with Shep to understand what happened. Let me explain to you what we know and the steps we are taking to get the packet operating. First, we do know that the packet was operational after launch because we heard the beacon on one of the first engineering passes over the US. Based on the discussions we have had with Shep and some of the characteristics of the ground system we think we have a handle on the problem. We have generated some in-flight maintenance procedures to help resolve and potentially corect the problem. We believe that one of two things have happened, either the ram backup battery died in the TNC or the TNC experienced a single event upset. In either case, we believe that the RAM parameters were either corupted or set to the default. We believe that the most likely scenario is a dead battery since we recently saw one of the batteries in a training unit die. If we are able to fully check out the system, this problem can be easily corected and the packet system will again be fully operational. I must remind everyone that these early stages of ISS introduce complications that we hope to not see in the later portions of the ISS operations. We are pioneering the use of the ISS hand-in-hand with NASA, Energia and the other international space agencies. As stated before, we don't have a good set of in-flight procedures on-board to recover from this problem. The ARISS team has tapped a team to work on a full set of on-board procedures for the operations of the whole ARISS system, including failure recovery procedures. This is a long term process, but will reap good dividends in the future. Also, there are too few Station Support Computers (SSCs) on ISS and there are none in the FGB where the amateur radio station resides. To do the full checkout and recovery will require the crew to disconnect one of the SSC computers from another area and use it to perform the checkout and recovery procedure. We are not sure when this will happen, probably in the next 2-3 weeks. We will keep you informed on this. We expect to fix this problem and move into autonomous packet operations soon.

School Group Contacts

As you know, we have had 3 successful school group contacts. We are rapidly converging on a program that will allow us to conduct 6 school group contacts per month. The ARISS team will provide updates on these contact times. Stay tuned.

Family Contacts

The lack of TDRSS coverage has resulted in a stronger need for the increment 1 crew to rely on the ARISS equipment to talk with their family. The ARISS team understands that this is impacting the general QSOs for now. I must tell you all how proud I am that amateur radio is playing such a big part of the psychological well being of the ISS Crew. I am certain that Shep will put in a very big plug for amateur radio when he does his post flight debriefings.

The Future

We are working with the team in Russia to train the follow-on ISS crews. The increment 2 & 3 crews have had sufficient training in Russia. We are working with the JSC team in Houston to get a bit of time with these crews to complement the great training that our Russian colleagues have given the crew. If the packet battery is dead, we will either develop an in-flight maintenance procedure to replace the battery or will swap the TNC with the flight spare. Please remember that a dead battery does not kill the packet system. We either need to keep it powered up or have an SSC on-hand to upload parameters right after power-up. We have additional equipment, such as the SSTV equipment and new antennas for the Service Module, that we hope to launch this year. (Actually the Russian team have already conducted a series of EVA training sessions in the Hyrdolab watertank in preparation for our antenna installation). We will continue to improve the hardware and operations. Just like the pioneers of the 1800's, the amateur radio community is blazing a new trail for human spaceflight. Trailblazing is not for the faint of heart. Let's all be patient and persistent. The ARISS team did just that with the hardware and we were ultimately successful. We are well respected and admired by our colleagues in the space agencies. If we continue to be patient and persistent as a team, we will all guide this program into a fantastic future with exciting opportunities for school students, the general ham community and the on-board crews".

Stellenbosch lose contact with SunSat Satellite SO-35

A statement regarding SO-35 was released by the controllers on 3rd February 2001. An extract from that statement appears below.

"We regret to announce that the last communication with SUNSAT from our ground station at the Electronic Systems Laboratory at Stellenbosch University took place on Friday, 19 January 2001 at 15:22:37 UTC. We are certain, after having performed several tests since the last contact, that an ireversible, probably physical, failure has occured on the satellite. It is therefore unlikely that we will have any further contact with SUNSAT, apart from the occasional visual sighting by telescope!

We are nevertheless very satisfied with SUNSAT's achievements in orbit during the period of nearly 2 years since launch. The programme has exceeded all its original goals, namely:

- to co-operate as OSCAR-35 with the amateur radio and amateur satellite

communities worldwide, contributing new standards in the field,

- to demonstrate high-resolution imaging not before considered possible with a satellite this size and cost,
- to stimulate challenging research and technology development at graduate student level,
- to foster valued international ties in the science and engineering community and
- to promote science, engineering and technology among the school children of South Africa.

Statistics from SUNSAT's operational life to underscore this statement:

- 696 days between launch at 10:29:55 UTC on 23 February 1999 and the last contact at 15:22:37 UTC on 19 January 2001, giving 10027 orbits, or nearly 500 million kilometers
- 51 high-resolution images captured all over the globe, in 3 spectral bands and 15 m pixel sizes on ground
- 937 command dairies uploaded in operating SUNSAT
- 241700 telecommands executed successfully
- 161144 kB of whole orbit data (WOD) downloaded
- 94868 kB of GPS-data downloaded in support of JPL
- 7052 kB of data for the star camera experiment
- 3144 kB of APRS digilogs, renewing interest in APRS via satellite
- 1656 kB of Magnetometer data
- 888 kB of international school experimental data
- Several hours of PAL videotape data of Southern Africa

It was indeed a privilege to be part of this successful post-graduate student satellite research programme! The SUNSAT management team wants to use this opportunity to thank everyone the world over for all the enthusiasm and the long extra hours they have invested in the design, building and operation of SUNSAT. The pride of having participated therein shall be treasured by all.

The statement was signed by:

Prof. Jan du Plessis and Prof. Arnold Schoonwinkel

You can find all the details of the SUNSAT mission on the web site:

http://sunsat.ee.sun.ac.za/.

ST

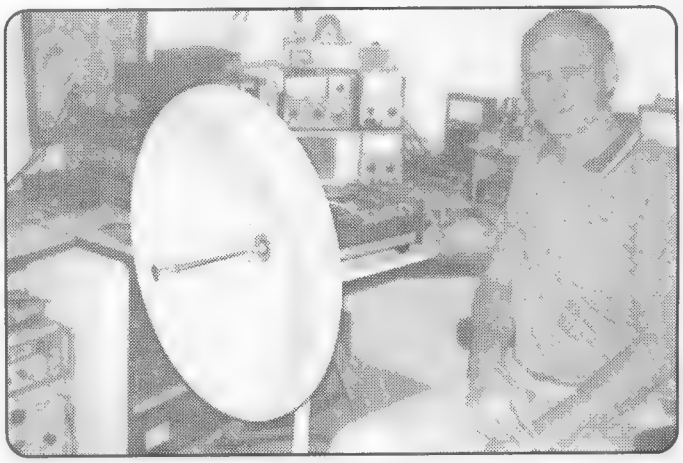
AR Cover Story

The installation of the West Australian VHF Group Inc beacons on 5.7 and 10 GHz at Wireless Hill Applecross (Perth)

5.7 GHz beacon on way up, 10 GHz beacon at top. From left: Cec Andrew VK6AO, Alan Woods VK6ZWZ and Luigi Iemi VK6YEH

These beacons are part of the Statewide network that the Group has established. Starting at the "left hand north west corner" of the State and running south to the "bottom left hand corner" and around to Esperance, this network includes beacons on 50 and 144 MHz at Exmouth (North West Cape), beacons on 50, 144, 432 and 1296 MHz in Perth, 50 and 144 MHz at Bunbury (pointed at South Africa, planned 1296 MHz and 10 GHz beacons at Busselton, 144, 432 and 1296 MHz beacons at Augusta (Cape Leeuwin) and a 144 MHz beacon at Esperance.

The Group established the first VHF beacons in Australia as part of the International Geophysical Year in 1957 to enable technical investigations of propagation and to assist amateur radio operators improve the performance of their receivers



Al Edgar VK6ZAY with record breaking 4.7 GHz gear in his shack, April 2000

DX Notes

Ross Christie, VK3WAC
19 Browns Road, Montrose 3765, Vic.
Email Vk3wac@aol.com

This month's DX Notes are a little shorter than normal. With commitments at work, to family and maintenance work on the QTH I find there is just not enough hours in the day to do all the things that have to be done. Unfortunately, DX Notes must take a place well down the list of priorities. I have had very little time available for getting on the air and working DX on the bands these past few weeks but I did find some spare time to fiddle around with PSK31 on 20 metres. Just listening on or around 14070kHz you can hear the peculiar 'warble' of PSK31. There seems to be quite a few stations on air using PSK and it seems to be rapidly gaining popularity as a reliable digital mode on HF.

I will try to spend some time on the air in the coming few weeks and do some serious DX working. Hope to hear you on the bands and in the pile-ups.

The DX

A5, Bhutan. Dimitri, RA9CO, is planning a trip to Bhutan. He plans to be active from the 15th to 21st of March as A52CO. QSL via UA9DD, P.O. Box 69, Ekaterinburg, 620073, Russia. [TNX RA9CO and The Daily DX]

C93, Mozambique. JG6BKB, JJ6VOV and JR6XIW have obtained their airline tickets for their trip to Mozambique. They plan to be on the air beginning on the 16th of March. They will use C93/ home calls on 6 - 80 metres, mainly on CW but some SSB, RTTY and PSK-31 is expected. Yuki, C93AN, may join the group if he is in the country. Equipment includes a FT-100, an IC-706 and a 2-element HB9CV antenna for the HF bands and dipole antennas will be used on the low bands. The group plans to be active until March 30 or April 4. QSL is via JG6BKB either direct to Mizuho Tanaka, P.O. Box 7, Hayato 899-5191, Kagoshima, Japan or via the JARL QSL bureau. [TNX JG6BKB and The Daily DX]

OH0, ALAND ISLANDS. The Aland Islands contest station OH0Z will be active on both modes in the ARL DX Contest as a single-op/all bands entry. Pasi, OH1MM, will operate the station on CW and Ari, OH1EH, on SSB. QSLs via OH1EH: Ari Korhonen, Kreetalank. 9 A 1, FIN29200 Harjavalta, Finland. For more info on the OH0Z station, check the Web page: http://www.qsl.net/oh0z

IOTA Activity

PJ8/FS, St Maarten, NA-105. Bob/ AA1M, Mike/W1USN and Jim/W1HL will be operating PJ8/homecall from Saint Maarten (NA-105) between the 27th of February until the 6th of March. They plan to be active on all bands from 80 – 6 metres on CW, SSB and PSK31. They also hope to do some operating mobile from the French side as FS/homecall during this time. QSL PJ8/W1HL and PJ8/AA1M via AA1M (direct or bureau), QSL PJ8/W1USN via W1USN (direct or bureau). [TNX W1USN and 425 DX News]

Special Events

3E500, PANAMA (Attention Prefix Hunters!). Cam, HP1AC, has let the OPDX that the "Radio Club de Panama" has obtained a special permit from the Panama Government Radio Dept Office so any amateur radio operator in Panama during the month of March 2001 will be able to use the special prefix 3E500 (Three Echo Five Zero Zero). This special prefix is to commemorate the 500th anniversary of the Discovery of the "Isthmus of Panama" in March 1501 by Don Rodrigo de Bastidas. An example is Cam's callsign (HP1AC); he will be using 3E500AC (Three Echo Five hundred Alfa Charlie). A special QSL will be issued to confirm all QSOs during the month of March 2001. QSL Manager will be HP1RCP, Radio Club de Panama, P.O.Box 10745, Panama 4, PANAMA. [TNX OPDX and The Daily DX]

EZ21, TURKMENISTAN (Attention Prefix Hunters!). Start looking for amateurs in this country to use the special prefix EZ21 to commemorate the new Millennium. EZ21BO was spotted on 10112 kHz around 2100Z and EZ21A around 14242 and 14266 kHz after 0230Z. [TNX OPDX]

Dxpeditions

3G0, EASTER ISLAND. Norbert, DL9NEI, informs OPDX that a joint Chilean and German DXPedition will activate Easter Island from the 4th to the 19th of March. Operations will take place on all HF bands. CW/RTTY will be the predominant modes on the lower bands and the WARC bands. The callsign to be used is 3G0Y. QSL via DK7YY. [TNX DL9NEI and OPDX]

Round up

17 Metre DXCC Award. DXCC has announced the addition of a 17 Metre Single Band DXCC award. Applications will be accepted beginning from the 2nd of January 2001. For further information, please contact DXCC at dxcc@arl.org [TNX N4AA, QRZ-DX and 425 DX News]

And while we are on awards, CQ MAGAZINE has introduced "The CQ Millennium Award". CQ magazine is offering a special operating award for the year 2001 to mark the start of the new millennium. "The CQ Millennium Award" recognizes anyone who meets the minimum requirements for any of CQ's magazines four permanent operating awards, minus the QSL cards, during calendar year 2001. Hams and short wave listeners may qualify for "The CQ Millennium Award" in one of the following four ways during the calendar year 2001,

1) Work stations in 500 U.S. counties — The basic level for the USA-CA Award
2) Work 100 countries — The basic criterion for the CQ DX Award
3) Work one station in each of the 40 CQ zones — The Worked All Zones basic qualification.
4) Work either 400 prefixes mixed-mode or 300 prefixes single mode (CW or SSB only), as required for the CQ WPX Award.

Applications should include log extracts showing the information required by the standard award rules, in the format required by the standard award rules, plus a 6 US Dollar processing fee (the fee will be 12 US Dollars for amateurs who reside outside of the USA. ADDED NOTE: There will be special recognition for those who qualify on the basis of more than one award program's requirements. Full details are published on page 15 in the January 2001, issue of CQ magazine. For a full description of the rules and forms go to the CQ website: http://www.cq-amateur-radio.com/ [TNX OPDX]

Here is one for all prospective Dxpeditioners. DX HOLIDAY WEB SITE (The Ultimate Dxpediton Resource!). The following Web site offers a starting point for people looking for a QTH for a DXpedition, Contest Expedition or IOTA Expedition! The site lists Renta-a-QTH, Ham Friendly Villas, Radio Clubs, etc. There is information on places to operate from over 100 countries, with additional DXpedition resource information on: picking your DX destination, licensing, travel documentation and money matters, health, emergency, weather issues, announcing your DXpedition, equipment packing tips and many other topics. This should be a veritable mine of information for prospective Dxpeditioners and those who would like to organise one but had no idea where to start. The website is http://pages.prodigy.net/k2kw/qthlist/ [TNX OPDX]

Sources

DX Notes are a little short this month for reasons already stated, but our kind regards go to the following for the information above, OPDX, 425 DX News, The Daily DX, N4AA, DL9NEI, W1USN, RA9CO and JG6BKB.

Club News

Urunga Radio Convention April 2001

The Urunga Radio Convention will be held over the Easter weekend of 13th - 15th April. This is where it all happens for young and old new and well seasoned. Interests from LF to UHF. Packet and Internet. A full range of Amateur Radio activities and interests.

This convention was the birth place of many of the fox hunting and hiding techniques widely used today. In the early days the only equipment on two metres was home brew, mostly mod osc txs and super regen receivers. If the rx had a rf stage it assisted in isolating the super regen emission on the frequency of the fox but also made the emissions from rxs without a rf stage stronger. The trick was to be able to differenciate between receiver emissions and the hidden tx, no small feat in those early days of equipment. A far cry from the sensative and sharp equipment of today.

The top photo shows two early participants. Were they foundation members of the temperance society, just off the water wagon or what?? Also who are they. Answer in the report on Urunga Convention later this year.

Make Urunga your venue for this Easter.

73s Brian Slarke VK2ZCQ.

Foxhunting 1950

Foxhunting 2000

ARDF

VK3WWW Jack Bramham
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Phone: +61 3 9873 2459 Fax: +61 3 94281589 Mobile: +61 0408037065

International events

During 2001 there will be quite a bit of ARDF activity, mostly International events.

US Championships

Starting off the year will be the US Championships, conducted in Albuquerque New Mexico from July 1 until August 4 presently there are two, Region 2 competing societies made up from the (ARRL) American Radio Relay League and (RAC) Radio Amateurs Canada. It has been mentioned that the US Championships will probably become the Region 2 Championships. More information regarding this event can be found at: www.egroups.com/files/abqardf/web/index.html

Friendly Radio Games

Following on from the USA championships will be the first Friendly Radio Games (FRG) these games commence on August 6th through until the 10th. ARDF is only one component of this event, amateur teams from different countries try their skills in HF phone and CW contests followed by an ARDF style foxhunt. Hosting this event is the Canadian branch of the Friendship Amateur Radio Society, more information regarding this event can be found at: www.islandnet.com/~jyoung/FRG01

Region 3 in Mongolia

Later in the year we hope to have an Australian team heading to Mongolia for the Region 3 ARDF Championships. The MRSF have agreed to hold this event but at this stage the WIA have not yet received an official invitation.

If you would like some more information regarding ARDF in Australia or would like to have a presentation at one of your club meetings, please send me some mail either QTHR or vk3www@alphalink.com.au.

ar

10th World ARDF championships in Nanjing, China, in October 2000

Opening Ceremony

Future Chinese champions

VK3TJN in China

WICEN Activation

— a recent incident

Flood Lismore January February 2001

In late January a flood situation developed over Northern NSW.

At 1807L on 1 Feb. 2001 a STANDBY request was received from the Aust. Red Cross, Lismore. The request for STANDBY was only in the event of evacuations. 12 oprs/pers reported in on a radio call around and offered their services. Several of these would not be immediately available due to flood effects on themselves.

Many minor roads cut and Summerland Way had water over but not cut. Road cuts were mostly by local rain which can fall equally quickly.

River height at Lismore 5m at 2000L, a rise of 400mm per hour. No problem.

Callout

Call out was received from Red Cross at 02 Feb 1100L.

River peaked at 10.4m 1700 L. This height persisted for some hours. Some evacuations commenced from caravan parks and isolated travellers. Evacuation Centre was set up at Southern Cross University. Major flooding of the CBD and N, S Lismore and basin areas continued. Although peaked, water was still filling basin, much lower than river.(1-2m).

We were not required for radio tasks as there were no urgent mass occurrences. We were asked to assist with Disaster Victim Registration at the Evac Centre. We only have three persons who have done the Red Cross DVR training. J. Toland VK2XKX, J. Alcorn VK2JWA, L. Martin VK2EA. They were on rostered duty at Evac Centre to 03Feb2200L. Total Time to date by all WICEN persons is 138 hrs.

Activation ceased 04 Feb 0800L.

Thanks to all who participated and all who offered to. Thanks to the SCU staff who assisted well beyond their normal duties. State WICEN responded to our SITREPS and offered all possible assistance if required. Thank you. As well as this callout a couple of members were recceing about the town reporting gauge heights and water locations back to the net. This was of assistance to us and others at the Evac Centre as the media info was very inadequate and out of date. People at the Evac Centre were very interested in this info.

A WICEN(NR) debrief was held at 1300 today. Details TBA.

NOTE: This flood height was about 2m less than 1954 or 1974.

For future events, as many members as possible are asked to do the Red Cross DVR training.

This is a one day course / exercise. This is a secondary role performed by WICEN in many regions. It is a way of making a worthwhile contribution when radio duties are not required. It does mean joining Red Cross for the huge fee of $2 per year.

Monitor radio

It cannot be emphasised too much how important it is to monitor VK2RIC when activation situations appear imminent. We are a radio organisation. It is time- and effort-wasting to need to ring around people we know to be in easy radio contact.

If it is not practical to continuously monitor, periodically call in and ask for info. Do not make your call to a specific station. It may not be there.

Procedure is that a call to a specific station is not replied to by any other station.

- There would be a monitoring station with the current info available.
- In your general call, make your request for update info. Do call several times and wait long enough for some reply.

John Alcorn, VK2JWA. LCO Lismore. WICEN (Northern Rivers)
Ph 02 66215217 jalcorn@nor.com.au

Roundabout at Magellan & Molesworth Sts, Lismore, 9.9m at 2 Feb 0930

Leith Martin VK2EA, Ian Gray VK2IGS standing, John Alcorn VK2JWA taking registrations at the Evac Centre, Southern Cross Uni.

Spotlight on SWLing

Robin L. Harwood
5 Helen Street, Newstead Tas 7250
61-3 63 44 2324 (International) (03) 63 442324 (domestic)
New FAX number 1-775-923-1855
e-mail : rharwood@iprimus.com.au

A Cat and Mouse game

One of my regular monitoring activities is to tune across the Utility allocations. On 28th January at 21.45, I heard a carrier on 8850 kHz, which is within the HF aeronautical allocation. I did not think much about it until I heard speech. It was a male talking and the modulation was well down, yet it quickly became apparent that it was not related to aeronautical communications, because some music came up, improving the audio.

I immediately thought it either could be an image on my receiver or a harmonic. Using another model with a different IF quickly dispelled that and a harmonic seemed the answer. Before I could calculate that a bubble jammer appeared on the channel almost wiping out the audio. So the signal must have been on that channel.

The signal level was barely breaking the noise threshold and rapidly fading.

However I did hear the speaker mention Iran and the language sounded very similar to Farsi so I thought it must be a clandestine because of the presence of the jammer. Initial indications from my Internet contacts seem to veer to the "Voice of the Mujahaddin" which does operate on odd channels. So I kept an ear on that channel over the next week and was surprised to find that they had moved up to 8870. As most of you would be aware, this is close to the main South Pacific aeronautical frequency and unfortunately there was considerable QRM from the Llandilo (NSW) senders and aircraft.

Switching over to USB did not help, as the level was too low. However the bubble jammer was absent, indicative of a cat and mouse frequency hopping game.

Also the times of the broadcast seemed to be irregular and programming also in slots from 10 to 15 minutes. The Choruses are very similar to what I have previously heard from Teheran on 15084 when they relayed their domestic service. Teheran is also on 9022 kHz and perhaps this explained the frequency selection. The next day the station was again on 8850 but 30 minutes earlier. It must be on a different channel each day because I could not trace it in the second week of February.

Monitors in the West may have a better chance of hearing it as propagation here in Tasmania drops off to Europe by 2200 on the lower frequencies.

I do wonder where they are located and who is backing them. I think it is not Iraq but as the sender must be low-powered, perhaps they are not using a regular transmitting location with higher power.

Usually clandestine broadcasters adhere to a fairly regular pattern and frequency choice so they can be easily found but the presence of bubble jammers makes it imperative that they shift to minimize QRM. Another clandestine monitored in the Northern Hemisphere around 2300 is supporting the Falun Gong movement which is banned in China. This also keeps jumping about in frequency to avoid jamming by broadcasting in 10 minute slots. They have been heard around 9.3 MHz or 9.9 MHz from an unknown site within the CIS.

JJY, the Japanese Time and Frequency Standard station will be permanently closing on 31st.March at either 1359 or 2359, depending on whether they are Japanese LT or UTC. They operate on 5, 10 and 15 MHz and are masked by WWV, WWVH and other Time stations but they have been on 8 MHz for quite a while and it is well heard here in our local evening hours.

There has been talk of a possible LF station to replace JJY.

Radio Australia began broadcasting from 29th January via various relay sites in SE Asia. Tinian and Saipan were added to Taiwan and Singapore.

However if you heard the Saipan relay at 0800 on 17805 in Indonesian on that date, consider yourself lucky as it turned out to be a one-off. Also if you hear Radio Australia on 15240 at 2200 UTC, it is not from Shepparton but from Taiwan!!. I have the full schedule but it is too long to include here.

The use of the Darwin relay has not yet materialized as there have been technical difficulties establishing the link between Melbourne and the site. This is rather ironic, as the site was formerly part of Radio Australia. The curent lessee, Christian Voice, has also not indicated when they intend to commence from Darwin. Apart from some initial test broadcasts at the end of last year, very little has been monitored here.

Dont forget that the next major broadcasting period commences at 0100 on the 25th of March, corresponding to the implementation of Daylight saving in Europe and the CIS. This period is known as A01. Very few broadcasters now use the first Sunday of March to alter frequencies preferring instead to make these alterations on the last Sunday in March and October.

Coincidentally we will be going off Daylight Saving also on the 25th of March, which for many of us has been unusually long this time around. Remember NSW, Victoria and Tasmania put the clock forward for the Olympics at the end of last August. The Crow-eaters changed over two months later.

Well that is all for this month. Until next time, the very best of listening and 73

Robin L. Harwood.

Repeater Link

Will McGhie VK6UU
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VK6UU@VK6BBR
will2@iinet.net.au

Just For Fun!

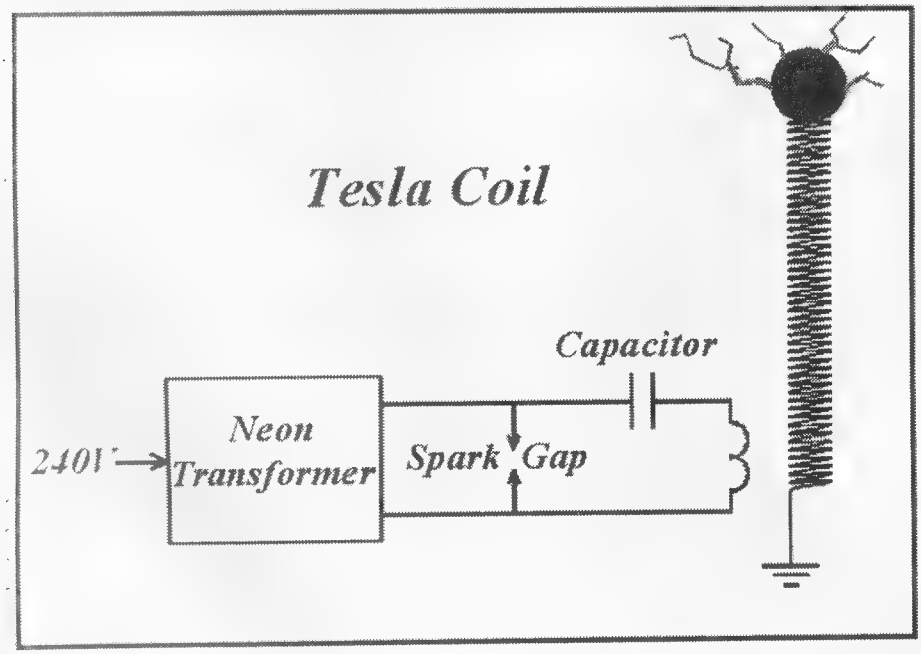
Have you ever had a project that you have been meaning to get around to it (the round tuart) for the past few years or so? One such project has been re-building a Tesla Coil. My first coil was made some 40 years ago, but due to the lack of knowledge (I was 12) and money, it never worked very well. A Tesla coil is an air cored RF step up voltage transformer. And I do mean step up. The sole purpose of a Tesla Coil is to produce very high voltages above 100,000 Volts. And what do you do with 100,000 volts plus? Just have fun with it.

The Young Experimenter

As a kid I always had a fascination with science and technology. At first it was chemistry, with a 44 gallon drum of pure hydrogen produced on site, by mixing aluminium and caustic soda (NaOH) together and using water pressure into the 44 gallon drum to blow up balloons. These balloons were set free, complete with notes to contact me if found. I never received any replies. Chemistry gave way to electricity experiments and running wires to friends places to make up a telephone system. We even began to learn Morse code way back then. Then an interest in radio and with it came Amateur Radio. One of the never quite finished experiments was a Tesla Coil. The Tesla Coil was an off chute of an Induction coil (car ignition coil) which can be used to drive the Tesla Coil. An Induction coil is what early radio transmissions used to generate a crude radio frequency wave. Several Induction coils were made in my early teenage years, but like the Tesla Coils never really produced the sort of sparks I knew could be produced. The years rolled on by and most of my high voltage coils went to the dump.

The Old Experimenter and the Internet

A few years ago I had another go at making a Tesla Coil after reading an article in an experimenters magazine. Like my earlier attempt it did not work too well and ended up in the back shed. Then came the Internet. Sitting in front of a search engine wondering what to look up, I typed in Tesla Coil. Back came thousands of references, so I started clicking on a few. What I saw left me gob smacked. People (usually American) had taken to making Tesla Coils in a big way and putting detailed information and photographs on the net. Now I had always know Tesla Coils, named after Nikola Tesla who invented them, could produce very high voltages in excess of 1 million volts. But to achieve such high voltages required considerable effort and expertise. However your "ordinary" man on the street was making Tesla Coils that produced voltages over one million volts, just like putting up a pergola on the house. These monsters varied in height from a metre (3') to 10 metres (33') in coil height and the pictures of the resulting lightning discharges of 1 (3') to 12 (40') metres in length just left me stunned. Photographs of one of these menacing looking devices parked out by the family pool and garage, throwing sparks into the pool and guttering of the garage, just could not be believed. But it was real and I just read and looked at photographs of Tesla Coil after Tesla Coil. The detailed plans and different ideas of how to make a Tesla Coil was all there on the Internet. What was more important to me was I now understood how Tesla Coils worked in terms of how to work out component values and what I had been doing wrong. Amateur radio aside I had to get back into good old fun of making something just for the shear excitement of it. The young experimenter was back with a new source of knowledge, the Internet.



What is a Tesla Coil

As I have said, a Tesla Coil is a radio frequency step up transformer. The frequency of operation is between 50kHz and 2000kHz depending on size. The

bigger the Tesla Coil the lower the frequency. The end result is the same however, very high voltages.

The operation is as follows. A high voltage capacitor of around 15nF (0.015uF) and 20kV and higher AC working voltage is charged up from a high voltage neon transformer and then connected across a few turns of wire, the Primary. Inside the primary is a secondary of between 700 and 1,000 turns. This large amount of energy from the high voltage capacitor is dumped into the primary, resulting in a very high voltage being produced in the secondary. Even basic low powered Tesla Coils poorly constructed and tuned produce 50 to 100 thousand volts. With the design working properly, a 200 watt neon transformer can produce voltages on the Tesla Coil secondary of 200,000 volts plus. This produces a very impressive and loud corona display.

So What?

So what, big sparks what next, and what is the point anyway? As I have said fun, at least for me, but what really took my interest was the diversity and detail that Tesla Coil builders had gone to. Known as coilers, these amateur experimenters, often with little knowledge of electricity, launched themselves into building very large Tesla Coils. And the resulting voltages incredible, with 1,000,000 volts being a good target. Voltages of this magnitude can jump about 2 metres, with the most mesmerizing corona discharges. Added to this is the loud crackle of the discharged, mingled with the sweet smell of Ozone and one is hooked.

Components

Without going into great detail, the components that make up a Tesla Coil do require considerable thought and this took me back to the fundamentals of electrical components. The primary driving force for a Tesla Coil is usually a Neon transformer of between 6 to 15kV. This AC voltage charges a capacitor, that once charged, discharges through a spark gap into the primary of the Tesla Coil. The charge capacitor is a fascinating adventure into basic electricity. This capacitor is subjected to between 6kV and 15kV (much higher in the really big Tesla Coils) AC in a charge discharge cycle 100 times a second. The AC voltage applied to this capacitor charges it up on the first half cycle until it discharges through a spark gap into a very low resistance coil. The next half cycle charges the capacitor in the opposite direction. To say the least a very demanding requirement for a capacitor. As a rule of thumb the capacitor should have a DC ratting of twice the applied AC, and preferably 3 times. So for a 10kV Neon transformer the capacitor should have a DC rating of 20 to 30kV, and be able to be charged and discharged 100 times a second without getting hot due to losses in the capacitor. The value of the capacitor is calculated to match the source impedance of the Neon transformer. This results in a capacitor value in the range of 50nF to 5nF for most Neon transformers. Just where do you obtain such a capacitor at a price you can afford?

Several ingenious solutions have been found to manufacturing the primary charge capacitor. The simplest is glass bottles partly filled with salt water and immersed in a bath of salt water. The two separate salt-water solutions are the plates of the capacitor and the glass bottle the dielectric. Simple but lossy, large and messy. Other home made types are aluminium foil and polyethylene sheeting (kitchen cutting board material), rolled up and immersed in oil. Difficult to make and if punctured a lot of work to rebuild. The current solution is a MMC, multi mini capacitor, made up of many seriesed capacitors. Capacitors with good dv/dt ratings (fast charge discharge low loss types) and as high a voltage rating as can be found and afforded. If one capacitor fails it is easy to replace.

Voltages of this magnitude can jump about 2 metres, with the most mesmerizing corona discharges....the loud crackle of the discharged, mingled with the sweet smell of Ozone and one is hooked.

Learnt

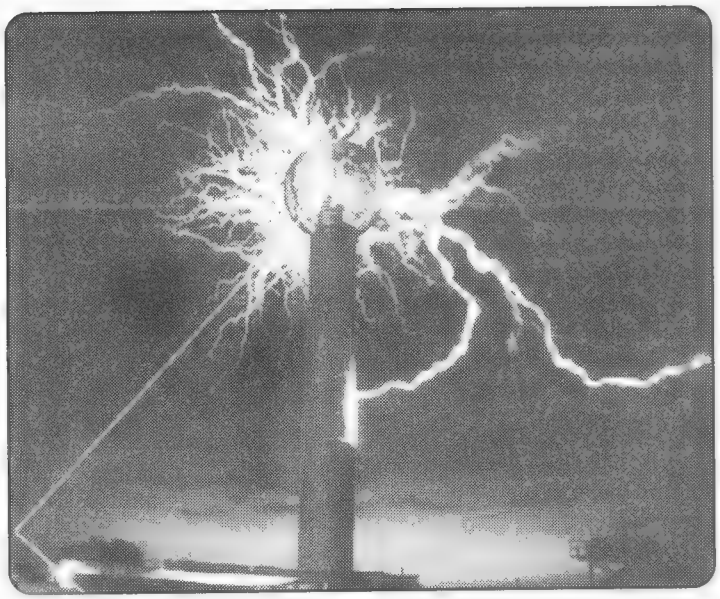
I found the research process into Tesla Coil design on the Internet fascinating. I learnt a lot about high voltage components and requirements. As an off chute, many Tesla Coil pages have links to experimenters that are on the odd and dangerous leaning. One such page showed what happens when a fully charged 30kV 10uF capacitor is discharged into a coil of 5 turns, inside of which is a coin! Apart from the coil vaporizing, the coin shrinks to about half of its size all round. It appears the crystal structure of the metal in the coin changes to a more compact form. I don't know if this really is for real but several web sites have many photographs of the process of discharging a stunning amount of energy into the coil and the resulting coin, looking wrinkled and smaller.

More Experiments

It is early days for my return to Tesla Coil making. Now that I understand the detail in how to make very large voltages, bigger and better coils will be the result. The existing coil stands just over a metre tall and produces corona discharges into the air of about a third of a metre. There is a real knack in optimizing the design to achieve the longest electrical discharge. For example Tesla Coils have a large (third to one metre in diameter) discharge ball on the top. The size of this metal ball effects the resonant frequency of the secondary and must be part of the design calculations, but equally as important is the part it plays in producing the biggest spark. If the secondary coil just ended as a piece of wire the voltage differential is very great between the wire and the surrounding air. This sharp differential allows a corona discharge at a much lower voltage and hence a smaller spark. However a gradual charge difference is created around the ball, as the voltage is spread over a larger area and this prevents corona discharge and allows the voltage to rise to as high as possible. Placing any protrusion on the ball then produces a large corona discharge.

Observations

One interesting observation is that the corona discharge into the air is only slightly shorter than a direct discharge to an earthed object. Direct discharges to earth also produce a brighter spark slightly off set over a few centimetres from the center. The rest of the spark is



15 metre Electrum tower strike at near full power;
E Orr is sitting inside electrode.
(Photo by J Decker)

at a lower visual intensity. I don't know why the spark is brighter over this short length just off center.

Subjecting different materials to very high voltages is an interesting way to spend some time. With no breakout point on the discharge ball so there is no corona, various materials are then placed on top to see how they behave. All metals of course produce a corona display into the air. But what about insulators? I tried black reticulation pipe and there was no corona, as did all plastics I tried. A wine cork also did not produce a corona discharge. The surprise was glass and ignious rock. These both produced a corona discharge but not by conducting the voltage through the material but around it. What a strange phenomena, the discharge into the air was not through the glass or rock but arced around the material and then into the air. Placing flat materials like glass and plastics on the top of the discharge ball, and then a metal object on top of this, would produce a discharge into the air straight through the insulating material as if the insulating material was not even there. No damage is done to the insulating material despite the high voltage arcing through it.

One strange, even frightening observation late one night was two 100W tungsten filament light globes 2 metres above the Tesla coil shinning to half brightness while the Tesla coil was running. Yes the filaments glowing, not the gas inside the globe. How could a 150W input to the Tesla coil radiate enough energy into two 100W electric light globes? I switched the Tesla coil off and went to bed to think it over. Just what else might the Tesla coil be capable of getting into in the house? My computers came to mind. Morning gave me the answer. The Tesla coil induces a voltage into the house 240V wiring, and as the wiring to the globes came down to an on-off switch which was within a metre of the Tesla coil, this induced voltage was enough to intermittently arc across the on-off 240V switch. It was the household 240 volts that were lighting the globes not the Tesla coil on its own. The Tesla coil was the trigger not the actual source of the power to the light globes. But a little scary at the time.

My coil: about one meter high

Photographs

So lets see some photos I hear you say. Well photographing a working Tesla coil often does not do it justice. The photograph does not capture the discharge crackle and the smell of the Ozone.

Included is one photo taken with my digital camera but the results don't look all that good, particularly in black and white. My coil is about 1 metre high.

Also included is a photo of the Electrum coil I found on the Internet. The coil is about 15m high and requires 40kW for full power. There is a person sitting in the ball on top! Have a look on the net, as there are many photographs. I will dig up my film camera and endeavor to capture some better photographs.

ar

Correction

2000 RD Contest results

Please note the following correction:

VK2BO was the top scoring station in the HF Open/Single Operator section in Australia and should have had a # to indicate this in the results published in AR magazine, Feb 2001.

In the published results, VK4LT was indicated being the top scorer. This was an error and I apologise to both stations for the mistake.

Please amend your copy of the results and be aware that this will not affect the issuing of certificates.

73, Alek Petkovic, VK6APK
RD Contest Coordinator

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All times are in UTC

Good Old Two Metres!

With six metres spluttering, especially down south, its good to see 2 Metres happening. Sadly VK6 seems to be conspicuous by all reports. Ray VK4BLK, Yeppoon reports on stations worked on 24/12/2000 on three propagation modes. " 0312Z VK3DUT 55/55 on 144.1 MHz via Sporadic Es, 0936Z ZL1IU 55/55 on 144.1 MHz via Tropo and 2026Z Vk2ZAB 51/51 on 144.1 MHz via Meteor Scatter, VK4TZL & VK4AJS also worked VK3DUT & ZL1IU" Ray VK4BLK

Gordon VK2ZAB reports ... "9/2/01 Another duct to ZL today. My impression is that we have seen more ducts across the Tasman over the past six weeks or so than ever before. Well at least over the past 20 years that I have been here. The catch is that there have been few stations on. Contacts have been made on 2m SSB to Nick ZL1IU umpteen times and to the stations in New Plymouth and Greymouth on 2m and 70cm a few times. There have been no contacts to the Auckland area until today. ZL2WSP at New Plymouth has been in and out all day on 2m and was heard on 70cm this morning although no contact was made due to QRM his end.

Then this evening Brian ZL1AVZ came up from his location on the coast west of Auckland on 2m and 23cm SSB. He worked Ross VK2DVZ on 2m. Ross alerted me that Brian was going to try 23cm and ROSS VK2DVZ, GUY VK2KU and myself made later contacts on that band as well as 2m. ZL1AVZ was 5/5 here on 23cm and gave me 5/6." ... Gordon VK2ZAB.

Ross VK2DVZ reports .. "Thanks to Rex VK7MO portable at Mt. Wellington for adding a new grid square to my 2m and 70cm tallies together with the new grid provided by Warren, VK3BWT on 70 cm as well. Rex was over 1300 km from me, while Warren is about 682km from me. His 2m signals varied from s1 to s7 during the time I was in the shack until 2300 UTC, 17-2 2001. Rex's 70cm signals varied from s1 to s6, tending to drop out at times. Lots of QSB on both bands. 23cm was tried:- I heard the carrier from Rex's end & he heard my cw beacon. No contact was made. All the more reason to try again! Rex and I initially exchanged 5/3 reports both ways on 144.18MHz and 5/4 reports both ways on 70cm. Warren and I exchanged 4/1 reports both ways on 70cm, whilst 2m reports were 5/3 sent and 5/4 received. Rex is able to claim a new VK7 distance record with our 70cm contact, unless he managed to work further afield after I left the shack around 2300 UTC." ... Ross VK2DVZ

24th of February Es and Tropo on 2m!

Ron Vk3AFW reports ... "On Saturday there was an extensive E's opening on 2m in the eastern states. Brisbane and Adelaide stations worked each other. At 0218 hrs UTC I worked John, VK4FNQ, at Charters Towers, 5x6/8, rec'd report of 5x7. Apart from being a long way North for 2m, this contact was unusual because John had no mains power and was running from a battery. (Probably lost the mains due to the cyclone on the coast.) Due to no mains he had his beam stuck on Sydney, nearly 30 degrees off axis! Apart from Trevor, Doug and myself, John worked several other VK3's plus Les, VK1BUC and Eddie, VK1VP. I was also able to work at 0239 VK4BRG, Sarina, 3x1 5x3 0312 VK4BLK, Yeppoon, 5x2 5x7" .. Ron VK3AFW.

VK5KK reports!! For some reason the 24th was going to be an interesting day. I had been talking to Charlie VK3FMD who had been watching William Hepburn's Tropo maps closely for microwave openings. A quick moving system was heading east over the land between VK5 & VK3 (a bit rare) over 23/24th of February. It looked good for Microwaves so I headed out around 2200Z with about 1/2 of the usual field day equipment (144, 2403, 5760 & 10368 MHz). My usual spot is about 3km North of Mt Lofty PF95ib about 600metres ASL with a good path to Melbourne and points further SE. A different world for working to the East compared to Adelaide!

On 144.1 MHz, from 2257Z, worked Alan VK3XPD, VK3WRE Ralph at Traralgon about 820km 52 both ways, Charlie VK3FMD, Jim VK3AEF at Nhill and Bob VK3AJN at Wangaratta. Trevor Vk5NC/P3 at Pt Fairy popped up regularly for a chat over the short 500km path from 2240 Z till about 0200Z! Shame it was a Saturday morning otherwise activity may have been higher. Alan VK3XPD and Charlie VK3FMD went out portable, at 0020Z to try 2 & 5 GHz but no signals heard in either direction. It was later felt that the peak may have been as early as 1830Z(5am!). Jim VK3AEF was still 59 at 0140Z. Jim reported hearing the VK5VF beacon on 23cm's up to S5 that morning. Mistake Number one and two was not taking out a 432 & 1296 MHz Yagi. It seems it would have been quite possible to work into Melbourne on both around 2230Z. 144 MHz equipment 25 Watts into a 6 element beam.

Mistake number two was packing up and leaving the site by 0210Z. At 0220Z the 900 MHz emergency hotline reported Es on 2 metres! Another 40 minutes arrived home to find the band still open. At 0318Z worked VK4EKA

Dougall 55/59, 0322Z VK4JSR Scott 52/52, 0328Z VK2EI Neil at Pt Macquarie 56 and at 0332Z VK2DVZ Ross at Taree 55/55. The band stayed open to northern VK2 till atleast 0400Z with both Ross and Neil QSBing to 59 at different stages. VK5ZBK also worked VK4JSR, VK2EI & VK2DVZ. VK5RO also worked atleast one VK2 on 1 Watt! An interesting day for late February, now if I had only stayed on the mountain for another 10 minutes...

Gippsland Technical Conference for 2001

The Eastern Zone ARC will be holding the fourth Annual Gippsland Technical Conference in Churchill, Victoria, on the weekend of July 8 & 9, 2001. This event has rapidly become the premier VHF/UHF/microwave technical conference in Australia and has attracted amateurs (and their partners!) from every State and even overseas.

The Organising Committee hereby calls for papers for the Conference. Any topic related to VHF, UHF or microwave operation, equipment, construction, or related material will be considered. A printed Proceedings volume will be prepared following the Conference, making a handy resource for your Library. It is hoped to have the Proceedings from the 2000 event available shortly. Copies of the 1998 and 1999 Proceedings are still available at a cost of $15 each, including P&P.

For further details see the Club web site at http://www.qsl.net/vk3bez/ contact the Club via email to vk3bez@qsl.net or at Eastern Zone Amateur Radio Club Inc., PO Box 459, Moe 3825, Victoria, Australia" ...Peter VK3KAI/1

New VK3 5.7 GHz record claim

Charlie VK3FMD reports ... "On 16/02/2001 at 2130 UTC I worked Trevor 5NC on 5760.1 MHz.

After a VERY early phone call to Trevor (I hope he's forgiven me by now) I went portable to QF21VV a spot just out of Drouin and Trevor went to Mt Benson at PF92VX which is just out of Robe SA. We managed to work at 2130UTC with signal reports 5 by 5 both ways. We had a ragchew for a while and contemplated extending this distance. Trevor however had some car trouble and we decided against this. The distance covered was 542.7 km which after verification with John Martin (WIA record claims) is a new VK3 / VK5 record on 5760 MHz. Equipment my end is a homebrew N1BWT design transverter with my own amplifier chain of an ERA5 followed by an MGF1302 followed by 2 cascaded IMFETs (5964-3) for a total of approx. 3W. Antenna is a 2-ft centre fed dish with a WA3RMX triband dish feed. " ...73 de VK3FMD

Microwave Primer Part Ten: 24 GHz & 47 GHz

I have included 47 GHz in this part with 24 GHz. We do have higher allocations than 47 GHz but techniques used are similar to 47 GHz. Everything is small .. a dipole on 47 GHz is just 1/8" (3mm)! JE1AAH said in one of his many articles that the degree of difficulty, above 10 GHz, increases as the square of the difference in frequency. So is 24 GHz nearly 6 times as hard to get going as 10 GHz. Read On!

24 GHz has one big disadvantage that makes it a challenge. Somewhere nearby (23 GHz) lies the first line of water molecule resonance. Simply put water becomes a significant attentuator, 30 times more than at say 10 GHz. Losses up to 1 db per km are possible in rain. Commercially links rarely go over 10 – 16km in most parts of the world. And propagation that works below 10 GHz only has mild effect at 24 GHz and above. Evaporation ducts seem to be the main operative. The world record on 10 GHz is currently claimed at 2079km, 24 GHz is 461km. A rule of thumb that has come up a few times here and overseas is that signals have to be atleast 40 db over the noise before anything is heard on 24 GHz over 150 plus paths. 24 GHz is good for short-range working and hence its use for "Speed radars".

Interest, in Australia, is probably restricted to half a dozen of so Amateurs in VK2, 3,4,5&6. Narrowband activity is at 24048 MHz in VK, by "gentleman's" agreement. This is the satellite segment, killing two birds with one stone rather than having operators on either 24192 MHz or 24048 MHz. If you have conquered 10 GHz and a few other bands on the way, 24 GHz is next. To just get operational with simple mixer type systems, it is not much harder than 10 GHz. If you want power and better receive performance then there are few short cuts.

So what do you start with? Almost all "Successful" 24 GHz systems I have seen are based on DB6NT Mk2 or Mk3 transverters. Parts of other systems like JE1AAH's have been reproduced but there have been disappointments. 24 GHz challenges reproducibility, unfortunately few things tune the same and change one part and the whole circuit may just act as an attenuator! All designs use Teflon PCB usually Rogers 5880 or equal 0.01" or 0.32mm thick!

The DB6NT transverters use a simple diode mixer arrangement with onboard LO doubling. To get about 150uW of 24 GHz SSB the transverter module is driven with about 1watt of 144 MHz and about 40mW of 11952 MHz local oscillator. Generating the Local Oscillator signal can be done one of many ways using surplus modules or etc. The noise figure, without Bandpass filter is probably 11- 12 db SSB. Still a pair of these will work with a 1 foot dish over 30 – 40km LOS paths. A good start to wet the appetite!

To improve the system from 12-db-noise figure and 150uW's gets a little bit more involved. Invariably you will need to add both Receive and/or transmit gain. Up to 20 or 30mW's the same amplifier for receive will also produce RF for transmit. Several systems have been built where the one amplifier does both duties successfully.

But before you add any significant amplification one other area has to be attended to. The original transverter has no Bandpass selectivity so the image (-288MHz) is produced or received without any attenuation. A direct 3 db loss either way. Now you can place a Bandpass filter at this port to remove the unwanted image (16 db is enough, anymore will not improve performance but will keep out of band products down!). The filter will introduce a loss however, probably in the order of 1-4db for the wanted frequency. All up you need 11 – 14 db of gain just to overcome the mixer and filter. Typical 3 stage Rx Preamps are capable of 20 db or more gain so receive is not too difficult. The same 20-db gain will give you 10 – 20mW's. With some switching (the biggest challenge see further) you then would have a very usable transverter now capable of better than 50km range.

The next quantum step in Output

power seems to be 80 – 100 mW's with parallel Gasfets. A popular group of amplifier designs comes from G8ACE who uses up to 8 hybrided HEMT's (NE32584C's) to get up to 500mW. Mind you that is three stages of 2 driving 4 driving 8 to get that! Shades of what we did in the late 80's with BFR91's on 2 GHz with 3-db gain per stage! Phase 3D runs (will run hopefully) about 500mW's on 24 GHz using specially developed Fujitsu FET's that are worth $1,000's. It is also possible to employ some 18 – 20 GHz TWT's on 24 GHz. 4 Watts seems to be the state of the Art for a TWT.

Antennas are just scaled down version of lower GHz antennas. A 1-foot dish has about 32-dbd gain when properly fed. A 2-foot dish is getting decidedly sharp! The biggest challenge with any system except for the basic transverter is how you perform Rx/Tx changeovers. Ideally a waveguide switch in WR42 is the best option but they are not common and cost many hundred's of dollars. At a pinch you can use a WR62 switch but you have to adapt from WR42 to WR62 and back again introducing matching and loss problems.

The alternative is perhaps Coax at first thought but another problem occurs. Popular SMA connectors resonate near 24 GHz .. they are too big! SMA's are usually only rated to 18 – 20GHz, the Socket is the real problem as you need a special type with a 0.7mm dia centre pin to match the 50 ohm trackwidth on 0.01" teflon PCB. Semi rigid coax losses run into dB's per short run. Coax relays rated at 24 GHz are rare. I have read descriptions where losses of using 18 GHz specification coax SMA's and relays have been accepted as a compromise but losses amount to 4 –5 db on both Rx and Tx paths. The old saying, better to have tried than not .. still much better than a basic transverter!

On 47 GHz (and 76GHz!) operation is almost entirely by harmonic mixers similar to the 24 GHz DB6NT one. Activity is almost entirely from VK6. Terry VK6TRG has been working on both 47 & 76 GHz for sometime. The challenge is not only to get equipment working but to have test gear that gives meaningful results!

Next Month we digress totally and talk about some specific applications .. using commercially available 2.4 & 5.7 GHz LAN cards on our bands!

New 76 GHz Record in the US

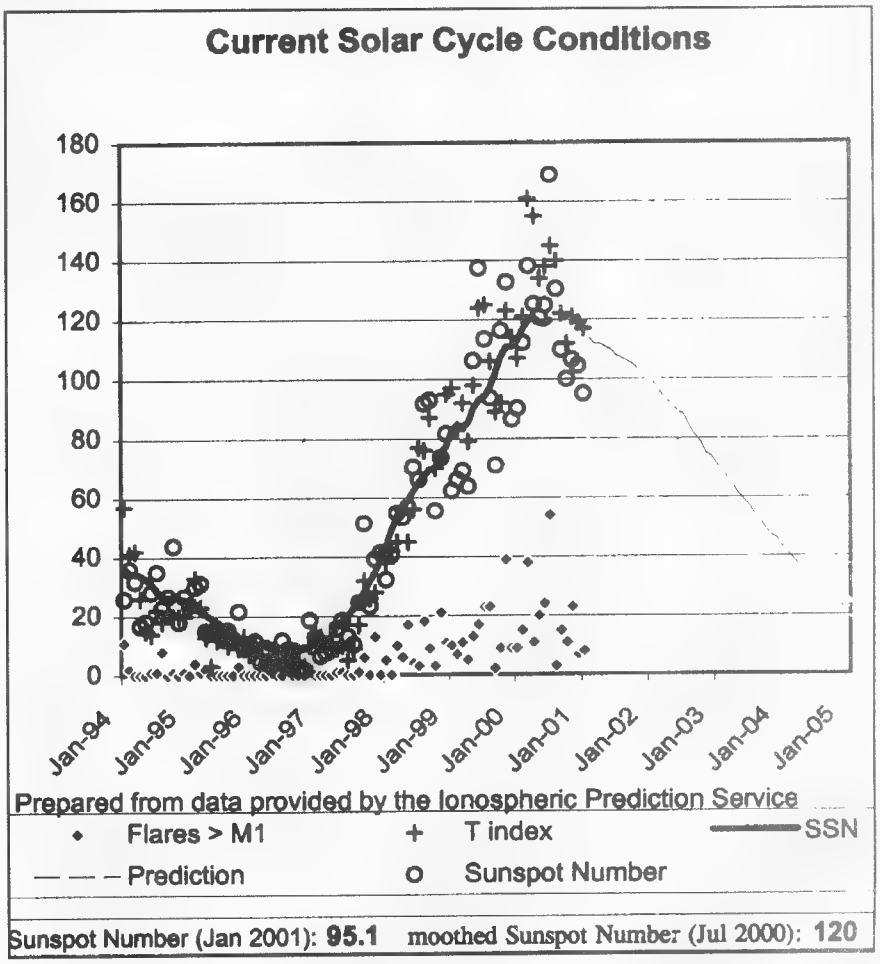
Will W0EOM reports ... "Feb. 1 2001 at 12.20 local, Will. W0EOM/6 worked Bob, KF6KVG/6 on 76 GHz. Bob was near Loma Prieta Mountain, at the QTH of Dave, W6NL, grid sq CM97BC. Will was on Mt. Vaca, grid CM88WJ, accompanied by Gary, AD6FP. mid - grid to mid-grid distance is 145 km. Weather was calm, mild, and hazy. margins were 1 to two S units with fades. Bob had a 12 in dish with 1 mw. Will had an 18 in dish, 5 mw. power."

In closing

Six-metre news has been slow of late. Someone coined the phrase "Sicks Metres" but I will let that one sit as read! Late February some JA Openings into VK3 & VK5 with Es extension. Scientist's recon that the solar peak is now here. On February 15, 2001 the Sun has underwent an important change with th magnetic field inverting. The Sun's magnetic north pole now points south! "This always happens around the time of solar maximum," says David Hathaway, a solar physicist at the Marshall Space Flight Center. "The magnetic poles exchange places at the peak of the sunspot cycle. In fact, it's a good indication that Solar Max is rea here." More information can be found at http://science.nasa.gov/headlines/y2001/ast15feb_1.htm?list134139

I'll leave you with the following thought "Sometimes we treat this world of ours as though we had a spare in the boot" Till next month

73's David VK5KK



HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

March 2001
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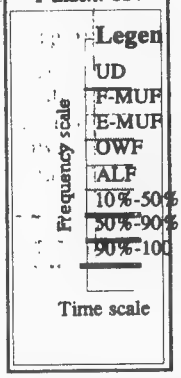
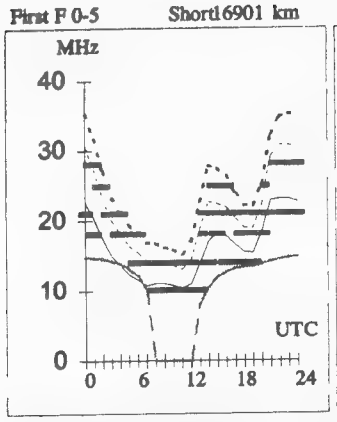
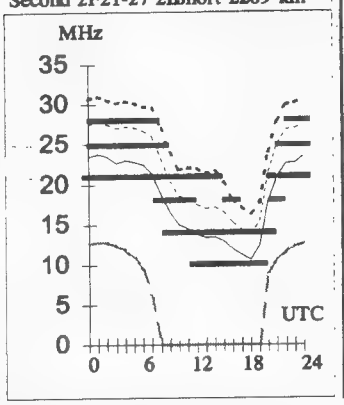


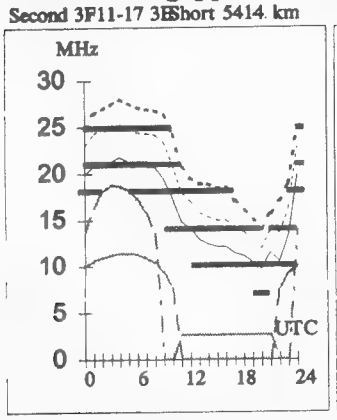
Adelaide-Ottawa 58
First F 0-5 Short16901 km



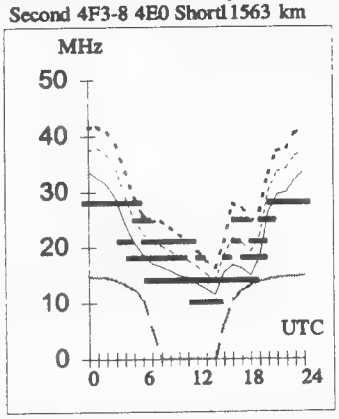
Brisbane-Auckland 123
Second 2F21-27 2E Short 2269 km



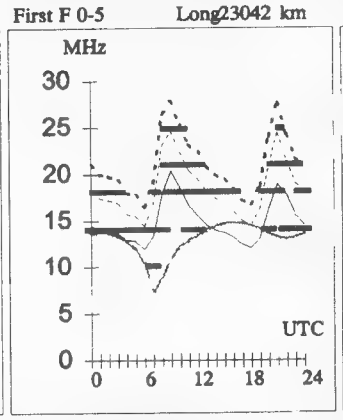
Adelaide-Singapore 311
Second 3F11-17 3E Short 5414 km



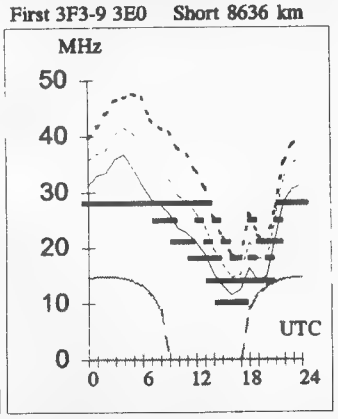
Brisbane-Los Angeles 59
Second 4F3-8 4E0 Short11563 km



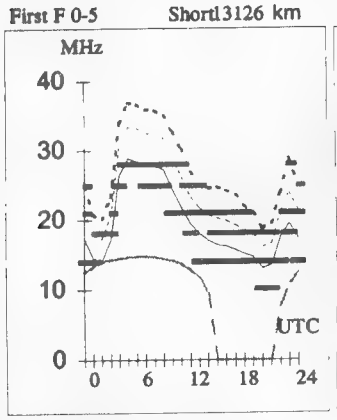
Canberra-London 136
First F 0-5 Long23042 km



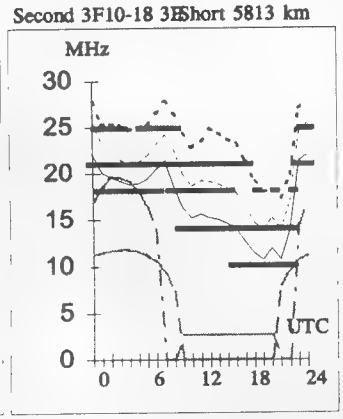
Darwin-Honolulu 65
First 3F3-9 3E0 Short 8636 km



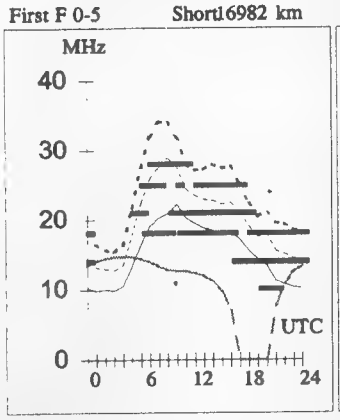
Adelaide-Tel Aviv 291
First F 0-5 Short13126 km



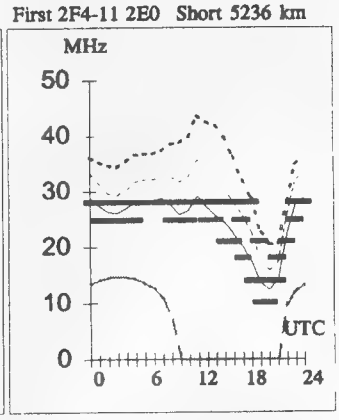
Brisbane-Manila 320
Second 3F10-18 3E Short 5813 km



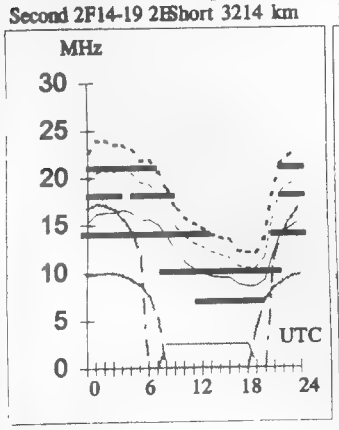
Canberra-London 316
First F 0-5 Short16982 km



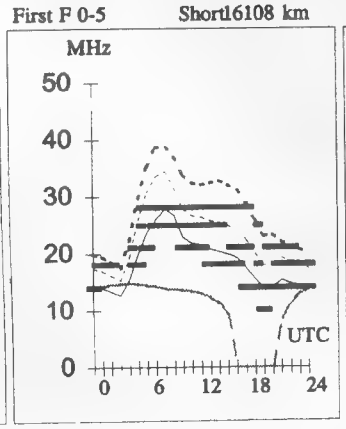
Darwin-Osaka 5
First 2F4-11 2E0 Short 5236 km



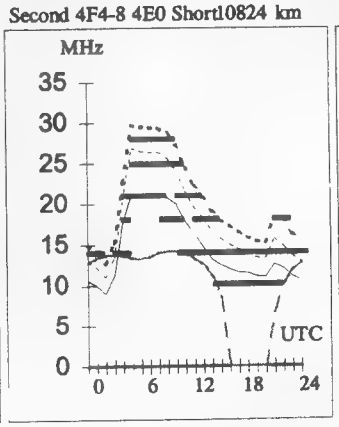
Adelaide-Wellington 114
Second 2F14-19 2E Short 3214 km



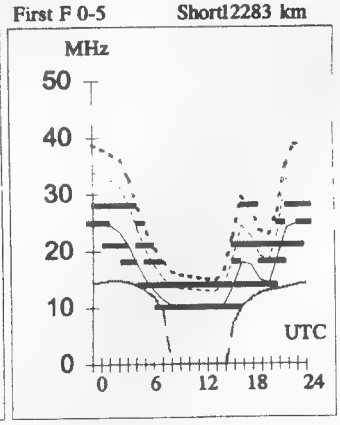
Brisbane-Rome 305
First F 0-5 Short16108 km



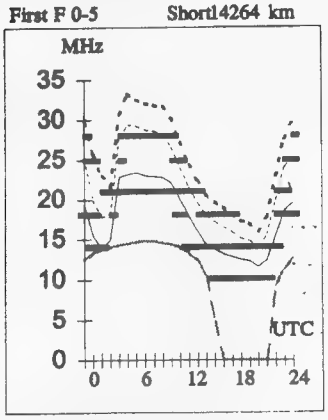
Canberra-Pretoria 231
Second 4F4-8 4E0 Short10824 km



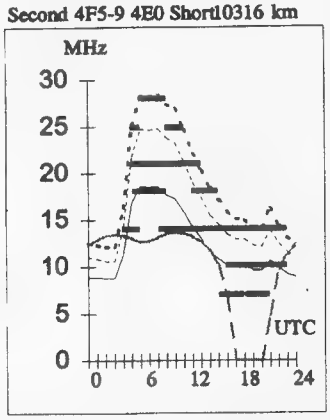
Darwin-Seattle 44
First F 0-5 Short12283 km



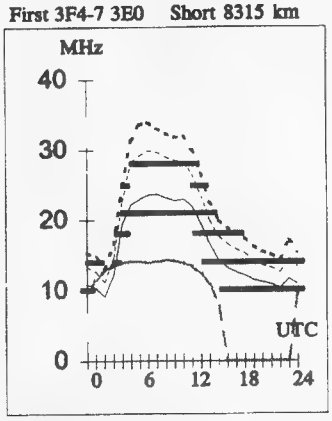
Hobart-Cairo 278
First F 0-5 Short14264 km



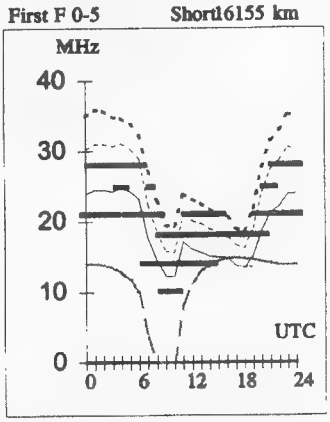
Melbourne-Capetown 222
Second 4F5-9 4E0 Short10316 km



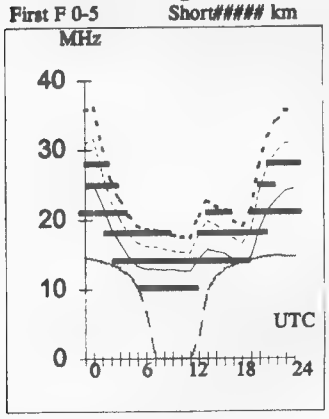
Perth-Johannesburg 248
First 3F4-7 3E0 Short 8315 km



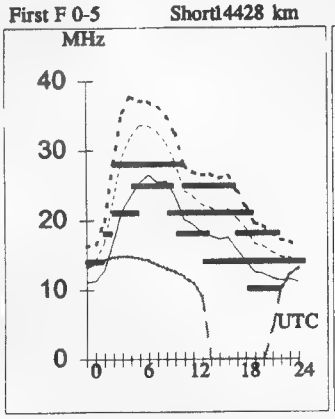
Sydney-Barbados 119
First F 0-5 Short16155 km



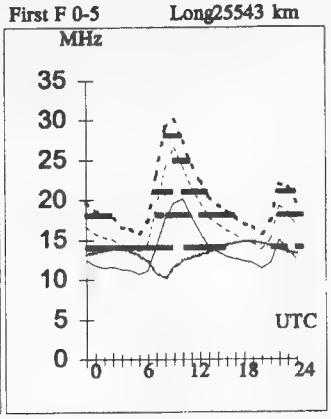
Hobart-Chicago 72
First F 0-5 Short##### km



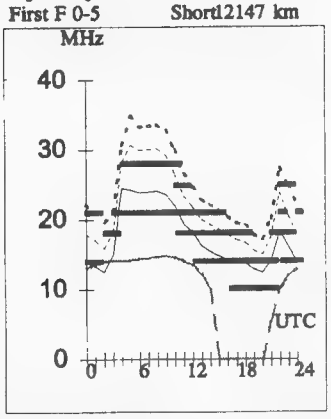
Melbourne-Moscow 316
First F 0-5 Short14428 km



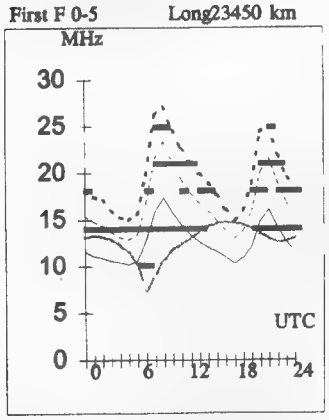
Perth-London 133
First F 0-5 Long25543 km



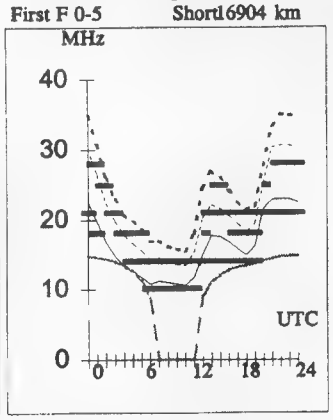
Sydney-Nairobi 255
First F 0-5 Short12147 km



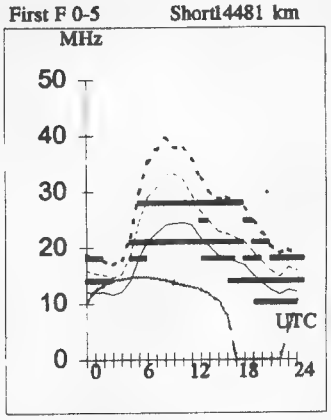
Hobart-Oslo 138
First F 0-5 Long23450 km



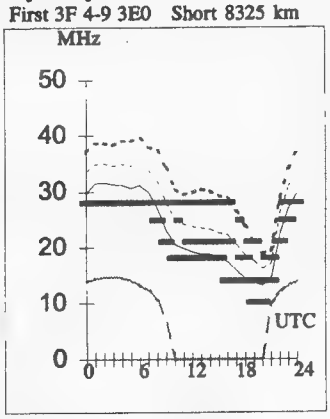
Melbourne-Quebec 60
First F 0-5 Short16904 km



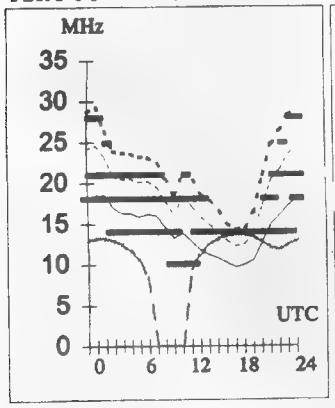
Perth-London 313
First F 0-5 Short14481 km



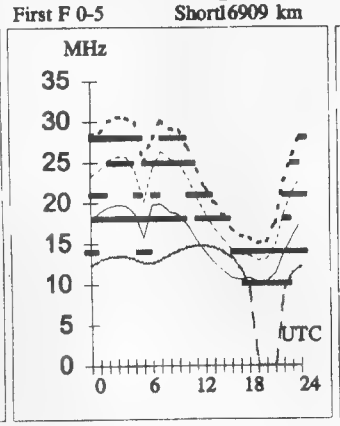
Sydney-Seoul 340
First 3F 4-9 3E0 Short 8325 km



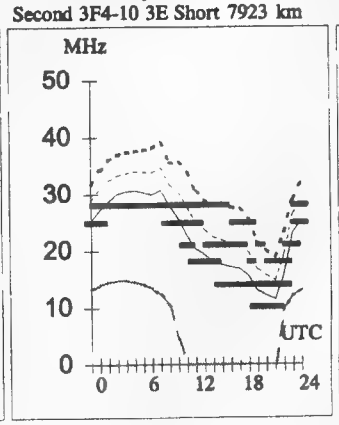
Hobart-Santiago 149
First F 0-5 Short10686 km



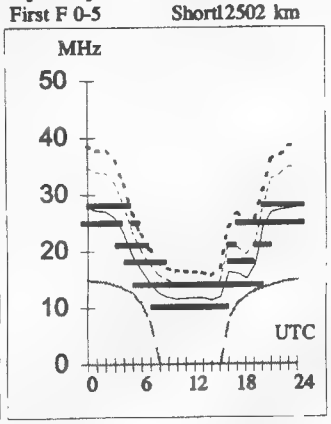
Melbourne-Senegal 219
First F 0-5 Short16909 km



Perth-Tokyo 20
Second 3F4-10 3E Short 7923 km



Sydney-Vancouver 45
First F 0-5 Short12502 km



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- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
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Please send your Hamad by ONE method only (email preferred)

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• Yaesu FT 107M S/N OH060302, owner's manual, Yaesu YM-38 mic, Emotator 1102 MXX, Chirnside CE-35LX Tri-bander 5 element antenna, Skytrim telescopic tilting mast 10.5m, all leads and plugs, world globe map flat. $1500 one lot. Lyle VK2IG QTHR (02) 9878 3380

• Yaesu FT7 Transceiver and Yaesu FL110 Solid State 100W amplifier combination complete with mobile mounts $300. N Chivers QTHR (02) 6674 2095

• Meters 2 1/4 Square 1940 Vintage 0-3 amp thermocouple; 0 to 0.5 amp thermocouple. 0 to 5 mA moving coil. New. Ted VK2BTB (02) 9644 4071

• Kenwood transceiver, model 440S-AT. Good condition, recently serviced by Kenwood. $800. Doug VK2DDR (02) 9949 3426

• Clean AR7 receiver with original pwr supply and five coil boxes. Ph (02) 9791 0366 Fax 02 9796 1658 Email: tonymul@pip.com.au. VK2ACV QTHR

• Eddystone communications receiver Type 640, antique, working with instruction book and spare valves $175 ; - Yaesu FT90R 2 m/70 cm s/n 9K120118, purchased Dec 99, used less than a dozen times.perfect condition $625 ; Diamond Model X200A 2m/70 cm stacked colinear base antenna $150. all plus freight Ph. O2 4751 1975 John VK2VJD, QTHR.

WANTED NSW

• Norm needs that unused HF SSB Transceiver, or unfinished HF Linear amplifier, 2 metre FM transceiver, working or not. Swap something, or donate so I can get back on air. Anything considered! Clean out the garage, see what you have! Phone Norm VK2ZG (02) 4965 7923 QTHR

FOR SALE VIC

• Panasonic Commications receiver DR49 #RKV2877A 0.53 - 30 MHz FM 88- 108 BFO digital readout. Excellent condition. $240. Kevin VK3CKL QTHR

• Q meter Marconi TF1245 with matching oscillator 50 kHz to 50 MHz with manual and some spare valves. $200. Hewlett Packard 5245L electronic counter, late model with 5261A plug in. Excellent condition $100. Morris VK3DOC QTHR (03) 9824 8988

• Heathkit HA14 linear amplifier and 1500v supply +3 x 527B tubes with handbook $400. Allen VK3SM (03) 9386 4406 QTHR

• Icom receiver R8500 SN 04058, tuning range 100kHz - 2 GHz all mode. 6 months old, pristine cond., deceased estate, $2000. VK3ZQ QTHR (03) 9598 7019

• Cushcraft R7000 Vertical Antenna $600. Kenwood TS-520S Transceiver, $200, AT-200 Antenna tuner $180, VFO520 Remote VFO $180, SP520 Remote speaker with vol. control $100, MC60 Desktop Mic, $100. Mizuho SX9 Pre-selector 3-30MHz $120. Hansen SF5 SWR meter $30. Daiwa DK210 Electronic keyer $60. HamKey morse paddle $50. Hustler Commander 400 Rotator $200. Shinwa #1005 RF filter low pass 30MHz cutoff $25. Contact David: Mobile 0410 404 512 Email davec@eisa.net.au

• (1.) CRT ex Radar Test Set . Tube type 4MP1 w/ shield and socket $20 (2) BC- 348-M, no mods, original wiring but new caps as appropriate, and resistors. Has original dynamotor and refinished front panel., but less ID plate $380 (3) MN-26 C radio compass complete with cables, loop antenna, tuning control and service manual $400 (4) BC - 433 G radio compass complete with all cables, controls loop, as used in Liberator bomber et al. $450 (5) Wrecked ARB receiver.. parts only e.g. tuning capacitor, coilboxes, IF's, output transformer. take it all $35 (6) Crystal calibrator # 10. as described HRSA July 2000 . $25 each. 3 available. (7). Navy Oscilloscope (new) OS-4B/AP, 2 available with manual and cables $60 each. (8) .BC - 733 D VHF nav . receiver with dyno. no mods $55. (9) Collins 678P-1 test/control box for use with 618T-( ) xcvrs. Complete with 714E-3 control box. Ideal for hook up to these xcvrs apart from forming part of test sequence. $350. P Williams VK3IZ 03 5156 2053 email jupeter@datafast.net.au

• Heathkit DX60B AM/CW TX $200 Kantronics KPC9612 Plus TNC $200 Kenwood MC-50 base mike $50 Combitech "Multiscan" SSTV modem (see their webstie for specs) $150 Trio 9R59DS RX $100 Damien VK3RX (03) 5427 3121

WANTED VIC

• Circuit & manual for Sanwa TV-FM sweep marker generator Model SM-109. Instrument handbook for BWD 502. Circuit & manual for KW-77. Valve Velocitron 2V1011 or ZV1011 for Polarad Sig-Gen. Brian VK3WYN QTHR (03) 5664 1251

• Weather Satellite Receiver e g Timestep Proscan, Hamtronics R139 or Rigsat RX2. Manual and alignment tools necessary. Phone Ken (03) 9592 9957. Email kea@ozemail.com

• Hewlett Packard model 524 electronic counter. This is the large vacuum tube behemoth. Prefer Victoria for pick-up. Morris VK3DOC QTHR (03) 9824 8988

• Hallicrafters HT-37 Transmitter Manual and/or Circuits, plus any other data or components that compliment this unit. Will pay costs. Don VK3 KDT, (03) 9439 1102

FOR SALE QLD

• Bird power meter 5 - 500 MHz and dummy load 5/15/50/150 watts $275. Also B & W power meter oil filled load 10/100/300/1000 watts $250. Ray (07) 3299 3819, fax (07) 3299 3821

• Kenwood TS570SG HF transceiver 1.8 - 54 MHz latest model includes 6 metres; all mode; as new, 12 month warranty. $2100. Hy-Gain Ham 3 antenna rotator, as new, owners manual etc. $600. Hy-Gain TH3MK3 Yagi 10-15-20m, all stainless steel hardware complete. $790. Kenwood TL-922 owners & service manuals, mint. $2500. John VK4SKY 0419 410 503, PO Box 1166, Coolangatta Qld 4225

WANTED QLD

• Headphones 2000 ohms in good order. Bill VK4WHS (07) 4123 4459 QTHR

• Plug in coil boxes for National HRO Rx also power supply for same, and HRO Rx for parts. Pay top money. Ray VK4FH PO Box 5263 Daisy Hill Qld 4127 ph (07) 3299 3819, fax (07) 3299 3821

• Specifications and installation details for Hills 15.8m wind-up tower. Keith VK4ZV QTHR Phone/Fax (07) 5465 6156 email: djak@uq.net.au

FOR SALE SA

• Large home brew transmitter 30" X 16" X 14" AM 130 watt PEP complete with BFO unit. Ideal for the real enthusiast. 80 40 20 15 10 metres coax or ladder line connection. VK5ZLC QTHR

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• Outbacker Classic OB8SP HF mobile antenna. John VK5ARL QTHR. (08) 8255 0617

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- If you got your licence before 1975, you are invited to join the Radio Amateurs Old Timers Club. A $2.50 joining fee plus $8.00 for one year or $15.00 for two years gets you two interesting Journals a year plus good fellowship. Arthur Evans VK3VQ or Allan Doble VK3AMD can supply application forms. Both are QTHR in any Call Book
- The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

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For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). www.cyberelectric.net.au/~rjandusimports

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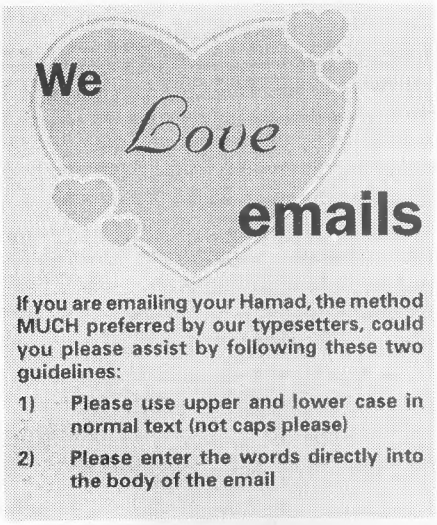

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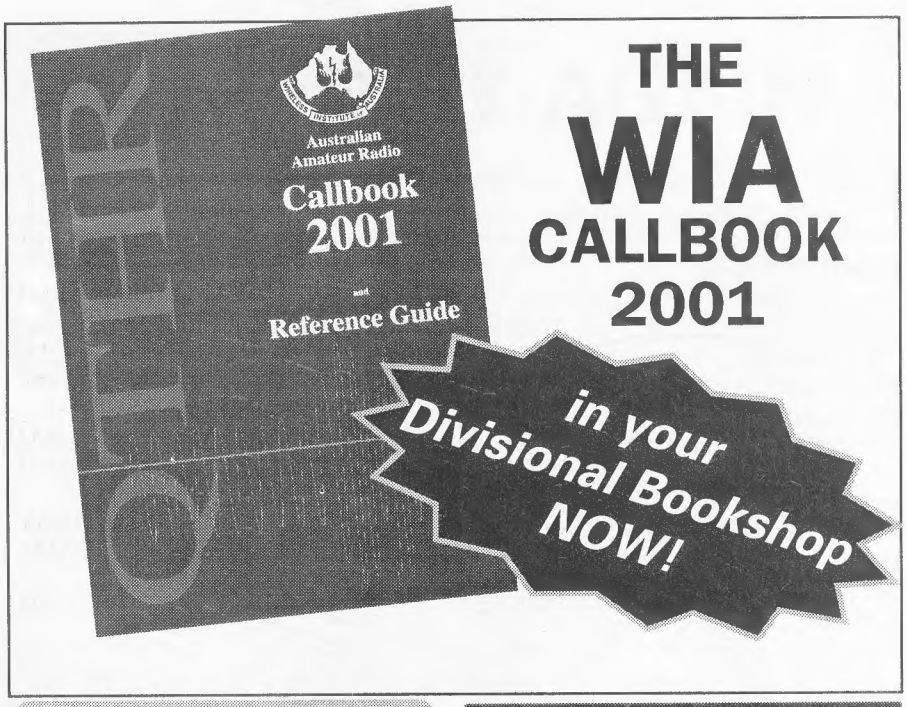
1) **Please use upper and lower case in normal text (not caps please)**
2) **Please enter the words directly into the body of the email**

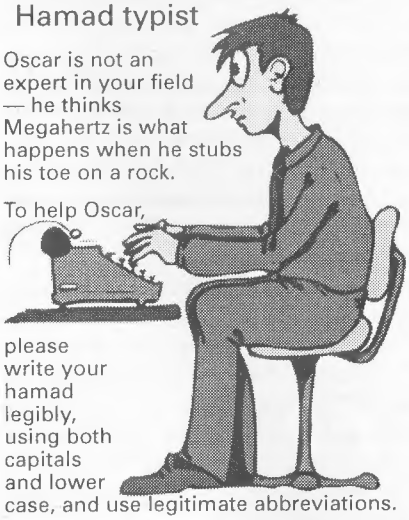


Have you heard this week's Divisional Broadcast?

See page 30 for times and frequencies.

PLEASE BE KIND TO OSCAR

Meet Mr Oscar Goldenboy, our Hamad typist



Oscar is not an expert in your field — he thinks Megahertz is what happens when he stubs his toe on a rock.

To help Oscar, please write your hamad legibly, using both capitals and lower case, and use legitimate abbreviations.

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Over to You

Note 1 Views expressed in letters are those of the authors and do not necessarly represent the policy of the WIA.
2. Some of the letters may be shortened to allow more letters to be published.

Expert On Tripe

Apart from some publicity the letter from the vice president of the Fremantle Tripe.

Club (AR December 2000) was [for me] unimpressive. However it did strengthen the theory; we are what we eat.

But let's get back to the pros and cons of Amateur Radio communication modes, in particular Morse code (CW) and SSB. I am not opposed to SSB or to HAMs who communicate by SSB, and I have NEVER objected to it. Comparisons perhaps but objections, never. Personally I prefer CW - it is a challenge.

But CW and SSB are as different as chalk and cheese.

Bugger! There I go again. I sincerely hope Ray Peterson is not the vice president of the Fremantle Cheese Club or a school-teacher, or we might finish back atsquare one.

VIVA CW. With gusto, please.

Allan Madigan VK2OA

Re: To Morse or not to Morse? Is that the question?

I, like many others, have been reading with interest the ongoing Morse code debate, deciding to remain silent. I adopted this attitude, as I have not pursued the challenge of sitting for any Morse exams, so I felt that I was not qualified to add my two cents worth. I passed my Regs and all the theory exams with a moderate amount of study, then purchased the obligatory Morse Tapes, and began listening to the nightly broadcasts. I also read every article I could find to learn the secret tips and shortcuts to make the job easier. As a professional percussionist for over twenty years, I felt quite at ease with the timing skills required to tap a little key, but for some reason, I did not have the dedication that I had when studying for the already passed requirements. Then I raised why. I was not prepared to put in the time and effort needed to learn a new language that I found uninteresting, had no interest in, or would ever use again. I still stand by that decision.

With all the surveys recently published, I've had the chance to voice my opinion, which I did, and it seems that the majority of amateurs share the same opinion as I do. I do not believe that Morse code should still be a compulsory part of the Full Call Licence requirements. This does not mean that I have an intense and absolute dislike of it as William McCarthy, VK4WMC in his AR December 2000 article would have you believe.

William writes of anachronisms and the Olympics, and cites Archery, Javelin, Shot put Rowing and Fencing as being akin to CW in our hobby. Would he then have competitors in the new Olympic sport Women's Water Polo, qualify by proving themselves at one of his anachronistic sports first? I think not, yet he is insisting that I, and others like me, do just that with CW. As for his Fishing Club being more interested in CW than other activities in his shack, I wonder if he was able to show them a live SSTV image from MR a fast scan image from another amateur, or a packet contact with the Shuttle?

Forcing people to learn Morse will not guarantee its survival, as the majority of full call or novice amateurs I have spoken with have not used a key since their exams. Those interested in Morse will learn it and use it whether it is mandatory or not, just as those with interests in packet, SSTV, ATV satellite, DX, EME etc seek information and learn the specifics required to accomplish their desired interest.

It seems to me that the "I had to do it, so you should too" is still the main logic being used to keep Morse as a requirement, instead of looking at the overall picture of our ever changing hobby and asking "what is the best for amateur radio to ensure we have a continued supply of new people to keep our hobby alive"?

Times change, so should we.

Ian Coots VK3YIC

Editor's note: Did you know that Archery was not an Olympic sport at Melbourne in 1956? It is one of the sports deleted as anachronistic in the 1948; it was reinstated in 1972.

The other side of the coin

Over the last few months we have read discourses from supporters and denigrators of the CW requirement for AOCP licences. Worthy of note is a particularly vitriolic par from Ian Gray VK21GS [Amateur Radio September 2000 page 50]. Whilst I don't oppose his right to complain, I will point out that a coin has two sides. I am just a CW operator (note that AOCP signifies amateur operator, not technician), with very little technical ability or aptitude. I joined the ranks of the Amateur Radio fraternity purely to "rag chew" with old friends, ex telegraphists like myself.

So, while I think I too, had it tough having to study radio theory for 12 months to operate a purchased transceiver, I did not complain about the rules. I just hopped in and had a go. But it took me twelve lousy months to get the theory exam passed. (I would have heaved the books in the river, but they probably would have floated). In due course, on returning home with my upgraded licence from NAOCP to AOCP, and with my head buzzing with all my new found knowledge, it really only allowed me to push in the 7 MHz. tuning button instead of the 3.5 one. A really 'top technical achievement.

Finally Ian, come have a look at my shack some time. My keys are not stuffed away in the cupboard, but are on my operating table ready for action. I have three of them - a hand key, a Vibroplex bug and a left-handed Automorse. Don't let the latter name fool you. This bug does not produce computerized Morse code. It is 80 years old and belonged to my father. I taught myself to operate it left-handed up to 25 WPM just with dedicated practice. You could do it too if you would accept a challenge. The bottom line is that it is all great fun.

A hobby Ian, a hobby!

Harry Gifford VK2GIF

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